

**SONY®**

DIGITAL VIDEO HYBRID RECORDER

**DNW-A100/A100P**

**DNW-A50/A50P**

**DNW-A45/A45P**

ANALOG COMPOSITE DECODER BOARD

**BKDW-505/506**

SDTI INPUT KIT

**BKNW-103**

ANALOG COMPONENT INPUT BOARD

**BKNW-104**

AES/EBU I/F KIT

**BKNW-105**



MAINTENANCE MANUAL Part 1

1st Edition (Revised 5)

## 警告

このマニュアルは、サービス専用です。

お客様が、このマニュアルに記載された設置や保守、点検、修理などを行うと感電や火災、人身事故につながる可能性があります。

危険をさけるため、サービストレーニングを受けた技術者のみご使用ください。

## WARNING

This manual is intended for qualified service personnel only.

To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

## WARNUNG

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.

Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegebenen Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

## AVERTISSEMENT

Ce manuel est destiné uniquement aux personnes compétentes en charge de l'entretien. Afin de réduire les risques de décharge électrique, d'incendie ou de blessure n'effectuer que les réparations indiquées dans le mode d'emploi à moins d'être qualifié pour en effectuer d'autres. Pour toute réparation faire appel à une personne compétente uniquement.

### Note

This unit uses an IC that contains a lithium battery.

DNW-A100	Serial No. 10111 and Higher
DNW-A100P (UC)	Serial No. 10001 and Higher
DNW-A100P (CE)	Serial No. 10001 and Higher
DNW-A50	Serial No. 10001 and Higher
DNW-A50P (UC)	Serial No. 10001 and Higher
DNW-A50P (CE)	Serial No. 10001 and Higher
DNW-A45	Serial No. 10001 and Higher
DNW-A45P (UC)	Serial No. 10001 and Higher
DNW-A45P (CE)	Serial No. 10001 and Higher
BKDW-505	Serial No. 10001 and Higher
BKDW-506 (UC)	Serial No. 10001 and Higher
BKDW-506 (CE)	Serial No. 10001 and Higher
BKNW-103	Serial No. 10001 and Higher
BKNW-104	Serial No. 10001 and Higher
BKNW-105	Serial No. 10001 and Higher

**Attention-when the product is installed in Rack:**

**1. Prevention against overloading of branch circuit**

When this product is installed in a rack and is supplied power from an outlet on the rack, please make sure that the rack does not overload the supply circuit.

**2. Providing protective earth**

When this product is installed in a rack and is supplied power from an outlet on the rack, please confirm that the outlet is provided with a suitable protective earth connection.

**3. Internal air ambient temperature of the rack**

When this product is installed in a rack, please make sure that the internal air ambient temperature of the rack is within the specified limit of this product.

**4. Prevention against achieving hazardous condition due to uneven mechanical loading**

When this product is installed in a rack, please make sure that the rack does not achieve hazardous condition due to uneven mechanical loading.



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# Manual Structure

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## Purpose of this manual

This manual is the maintenance manual part1 of digital video hybrid recorder DNW series. DNW series includes the following models.

DNW-A100/A50/A45

DNW-A100P/A50P/A45P

This manual is intended for use by trained system and service engineers, and provides the information that is required to install, maintenance information, and the information for service such as replacement of plug-in boards.

Moreover, provides the related information (how to install, etc.) for the following optional boards.

BKDW-505/506     Analog Composite Decoder Board

BKNW-103         SDTI Input Kit

BKNW-104         Analog Component Input Board

BKNW-105         AES/EBU I/F Kit

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## Contents

This manual is organized by following sections.

### Section 1    Installation

Explains the information that is required to install (environment, connection information, initial setting, etc.) and when building optional board into this unit (installation, initial setting/adjustment, etc.).

### Section 2    Service Overview

Explains fundamental area of the information that is required to service, (removal of cabinet and cassette compartment, the functions of printed circuit board, the locations of main part, fixture and measuring equipment information, notes, etc.), the measures against trouble and ISR (Interactive Status Reporting).

### Section 3    Error Message

Explains the error messages.

### Section 4    Maintenance Mode

Explains each menu of the maintenance mode.

### Section 5    Periodic Maintenance and Inspection

Explains the recommended periodic maintenance, the cleaning procedure, and the video head tip protrusion check procedure.

### Section 6    Replacement of Plug-in Boards

Explains how to replace the plug-in board and how to adjust and check after replacement.

### Section 7    Spare Parts

Describes the spare parts list and the exploded view for the service parts of this unit, and the packing materials and supplied accessories list.

## **Appendix A Outline of Format**

Explains the Betacam SX format and the head configuration.

## **Appendix B Setting Check Sheet**

The sheet is used for checking the setup conditions such as switch, setup menu under the application.

## **Appendix C Block Diagrams**

Describes the overall block diagram.

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## **Related manuals**

Besides this “maintenance manual part 1”, the following manuals are available for digital video hybrid recorder DNW series.

- **Operation Manual (Supplied with the DNW.)**

This manual is necessary for application and operation (and installation) of the DNW.

- **Maintenance Manual Part 2 (available on request)**

Volume 1 : Service Instruction

Volume 2 : Parts List

Volume 3 : Diagrams

These manuals describe the information that premises the parts level service (adjustments, board layouts, schematic diagrams, detailed parts list, etc.) for this unit and optional boards.

If these manuals are required, please contact your local Sony Sales Office/Service Center.

- **Protocol Manual of Remote (9-pin) Connector (available on request)**

This manual explains the protocol for controlling the VTR via the RS-422A (9-pin serial remote).

If this manual is required, please contact your local Sony Sales Office/Service Center.

- **Disk Protocol Manual of Remote (9-pin) Connector (available on request)**

This manual explains the protocol for controlling the hard disk of the hybrid recorder via the RS-422A (9-pin serial remote).

If this manual is required, please contact your local Sony Sales Office/Service Center.

- **ISR Protocol Manual (available on request)**

This manual explains the ISR functions (Interactive Status Reporting/Integrated Equipment Management Function) of this unit.

If this manual is required, please contact your local Sony Sales Office/Service Center.

## Caution for Handling the Unit with Built-in HDD (for Part 1)

This unit has two built-in hard disk drives (HDDs). Pay careful attention to the following and perform operations with care when installing, servicing, and maintaining this unit.

---

### **Never give any mechanical shock and vibration.**

This may cause an HDD trouble or destroy the data in HDD.

- Pack this unit using specified packing materials when carrying the unit. Use a cart with less-vibration when carrying this unit by a cart. If an excessive mechanical shock and vibration are applied, the HDD may be damaged.
- Never move this unit under power-on state. Take out or insert this unit from or into the rack in a state of powering off. Also never install or remove the cabinet under power on state.
- When putting the unit on the floor, put this unit gently with the four specified feet which is attached to the bottom of the unit on the floor. If there are no feet on the bottom, attach them before putting this unit, or put this unit gently so that no sound is generated.

---

### **Never operate the unit for 30 seconds after the power is turned off.**

The disks in HDD rotate by inertia for a while after the power is turned off. In this case, the heads are in the unstable state. During this period, the HDD is more sensitive to a mechanical shock and vibration than during power-on state. Never give even a slight shock at least 30 seconds after the power is turned off. Operations can be initiated (because the disks stop) after 30 seconds or more.

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### **In the event of trouble in HDD**

If there is something wrong with the HDD of this unit (a failure occurs in the HDD), handle this unit in the same manner as described above. This protects the HDD from increase of the damage till confirming the contents of the failure or analyzing the failure.

# Section 1

## Installation

### 1-1. Installation Procedure

#### CAUTION

This unit has build-in hard disk drives (HDDs). Pay careful attention when installing the unit.

Be careful not to give a shock and mechanical vibration to it. This may cause a trouble.

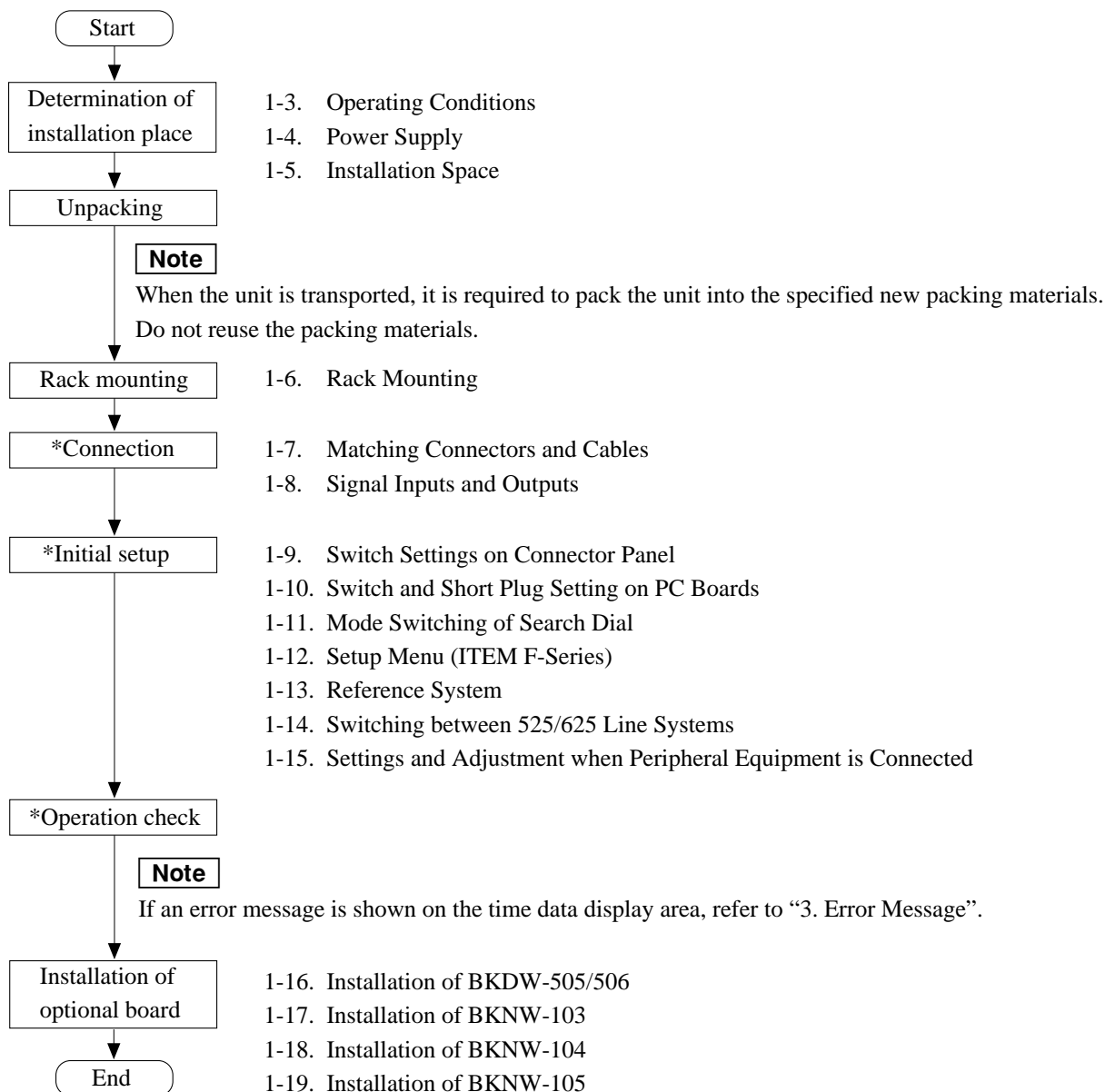
Installation procedure of this unit is shown on the following flowchart.

Refer to each section about detail of each flow.

The operation manual is also required to do \*-marked flow.

### 1-2. Supplied Accessories

AC power cord set .....	1
Plug holder .....	1
SCSI terminal connector .....	1
Screws for rack mounting (PSW 4 × 16) .....	4
Operation manual .....	1
Maintenance manual (Part 1) .....	1



## 1-3. Operating Conditions

### CAUTION

Good air circulation is essential to prevent internal heat build-up. Place the unit in location with sufficient air circulation.

Do not block the ventilation holes of the cabinet and the front and rear panels.

Operating temperature: 5°C to 40°C

(When the inner of the unit becomes less than 5°C, the hard disk portion does not start up because of entering into warm up mode.

The inner of the unit becomes 5°C or more, the hard disk portion start up automatically.)

Operating humidity: 25% to 80% (non-condensing)

Storage temperature: -20°C to 60°C

Locations to avoid:

- Areas where the unit will be exposed to direct sunlight of any other strong lights.
- Areas near heat sources.
- Dusty areas or areas subject to vibration.
- Areas with strong magnetic field.
- Areas with much electrical noise.
- Areas with much static electricity.
- Areas that is impossible to find a specified room for installation. (Refer to “1-5. Installation Space”).
- Areas windtight.

Tilt allowance : Within 30° (Do not slant the front and rear of the unit more than 30°.)

### CAUTION

Fix the unit securely to avoid drop when the unit is operated at not-horizonal place.

## 1-4. Power Supply

### 1-4-1. Voltage and Power Requirements

This unit's power line has a switching regulator.

### CAUTION

Be sure to operate the unit within the range of following power voltage.

Power voltage: AC 100 to 240 V  $\pm$  10%

Power frequency: 50 Hz or 60 Hz

Power consumption: DNW-A100/A100P; 320 W (320 VA)  
DNW-A50/A50P; 300 W (300 VA)  
DNW-A45/A45P; 300 W (300 VA)

Rush current: Power voltage 100 V IN; 10 A  
Power voltage 240 V IN; 20 A

The power consumption just described is includes the power consumption of a optional board BKDW-505 or BKDW-506.

### Note

AC power supply is required a capacity which is commensurate with rush current.

If the capacity of the AC power supply is not enough, the breaker of AC power of a supply side may operate or this unit may not operate normally.

### 1-4-2. Power Cord

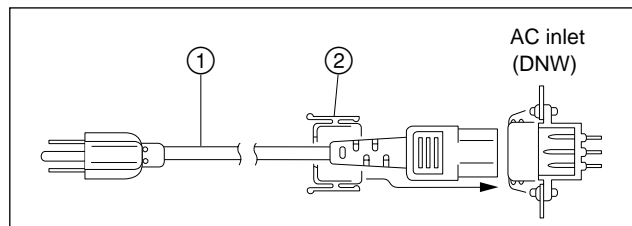
### WARNING

Use the specified power cord only when connecting.  
Never use a injured power cord.

Power cord for the customer in the U.S.A. and Canada.

① Power cord set (approx. 2.4 m)  $\Delta$  1-551-812-11

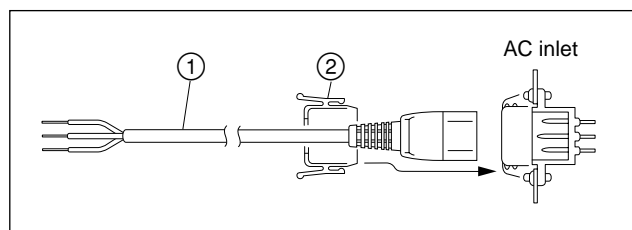
② Plug holder (Black) 2-990-242-01



Power cord for the customer in the United Kingdom.

① Power cord set (approx. 2.5 m)  $\Delta$  1-782-929-11

② Plug holder (Brown) 3-613-640-11



If the unit destined for Europe is used in the area except the United Kingdom, please contact your local Sony Sales Office/Service Center.

## 1-5. Installation Space

When installing, the installation space must be secured in consideration of the ventilation and service operation.

- Do not block ventilation (upper lid, right side panel, lower portion of front panel and bottom plate) and exhaust part.
- Leave a space around the unit for ventilation.
- Leave a space more than 40 cm at the rear side of the unit to secure the operation area.

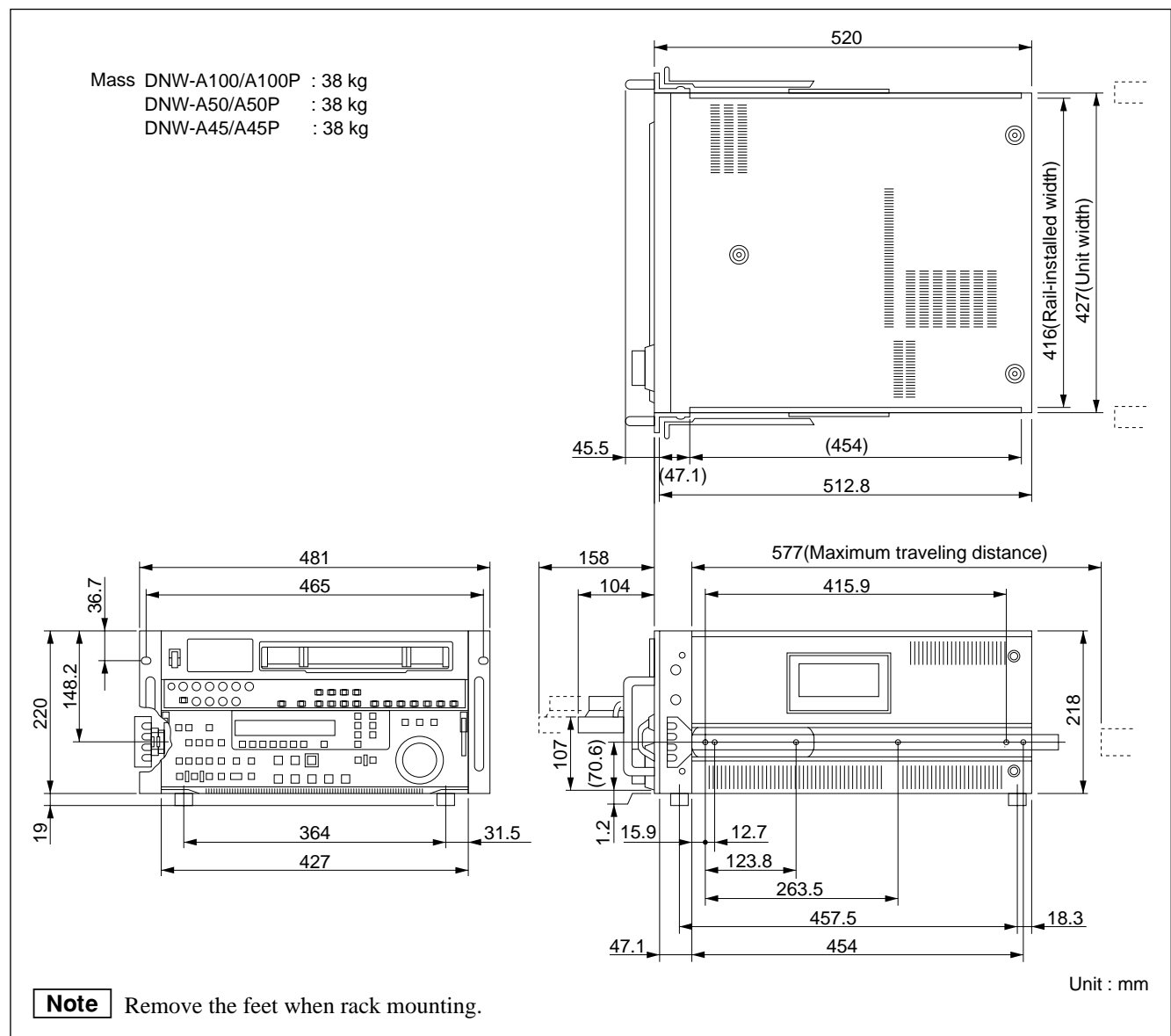
When the unit is installed on the desk or similar condition, assure that the clearance at the upper and right sides is at least 4 cm. However, it is recommended that the clearance above the unit is more than 40 cm in consideration of the service operation.

When the unit is mounted in the rack, leave a space on the top and bottom of this unit by 1U.

Moreover, an air flow that is effective in cooling the unit is essential. If the ventilation is not enough, the unit may be damaged because an increase of the internal temperature of the unit can not reduce.

### Note

This unit is air-cooled by four fans. However for the operation with the upper lid removed, the air cooling effect using the fan decreases. Complete the work in a short time as far as possible when the unit is operated for inspection with the upper lid removed. Blow a wind using an electric fan so as to suppress an increase in temperature when the work is continued for a long time with the power turned on.



Dimensions when Rack-Mounting

# 1-6. Rack Mounting

Explains how to mount this unit into a 19-inch standard rack.

Be sure to mount this unit into a rack accurately as following the procedure with the specified rack mount rail.

## CAUTION

- Use the specified rack mount rail.  
If not, injury could occur by drop of the unit because strength of rail is not enough.
- To prevent toppling over the rack, fix it on the horizontal and firm floor securely with bolts, etc.

## Notes

- When other equipment with built-in hard disk drive are already mounted in the same rack for mounting this unit, turn off the power of the equipment which is already mounted before mounting this unit in the rack.
- Never remove the upper lid, bottom plate, and so on during rack mounting.
- Connect long enough cables on the connector panel, considering that the unit is pulled out from the rack.
- To reduce an increase in the internal temperature of this unit, leave each space on the top and bottom of this unit by 1U.
- Adjust the temperature inside the rack within the range of the unit's operating temperature.

## Specified Rack Mount Kit

RMM-111 (Option) or  
RMM-110 (Option)

The color of rack angle of RMM-111 fits to the unit.  
RMM-110 is the same consistence, strength and dimension as RMM-111, but the color of rack angle is different.

## Note

It is recommended to use the BKFC-53/2 when this unit is mounted in the FLEXICART.

## Parts Packed in RMM-110/111

- Slide rails ..... 2
- Rack angles (handle) ..... 2
- Rail brackets ..... 4
- Plate nuts (large) ..... 4
- Plate nuts (small) ..... 4
- Screws (PSW4 × 16) ..... 4
- Screws (B4 × 8) ..... 8

- Hexagon socket head cap screws .... 8
- Flat washers ..... 8
- Screws (RK5 × 14) ..... 2
- Ornamental washers ..... 2
- L-shaped hexagon wrench..... 1

## Rack Mounting Procedure

### • Remove of feet

## CAUTION

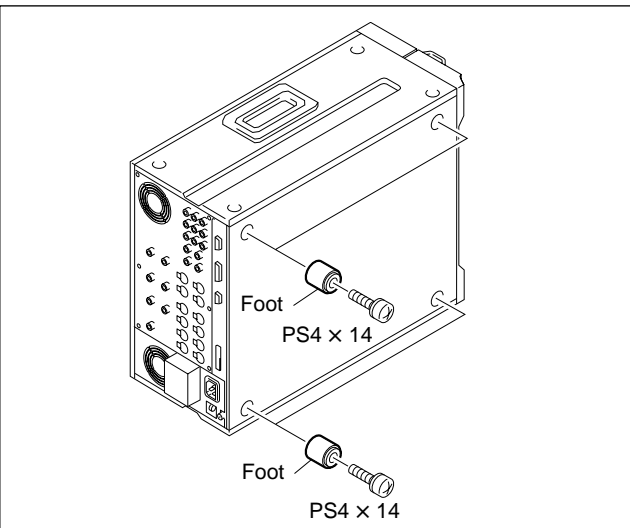
Move the unit as gently as possible to avoid shock to the hard disk drive. Pay particular attention to move of this unit without feet.

1. Set the unit with its right side panel down.

## Note

Lend your hand so that the lower handle does not hang down.

2. Unscrew the four screws and remove the feet from the bottom plate of the unit.
3. Replace the unit to the horizontal position.



## CAUTION

Keep these screws and the feet that are removed in this procedure carefully.

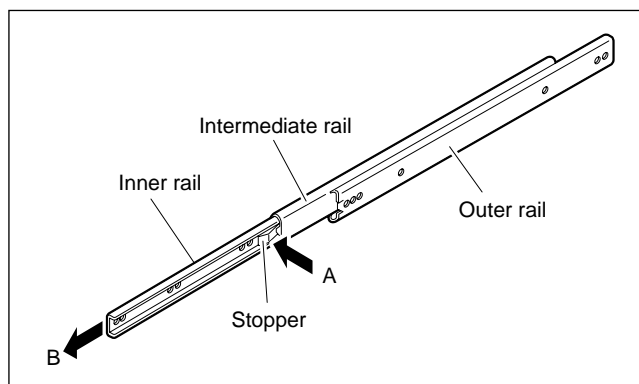
Be sure to attach the feet if the unit is used after removing from the rack. If not, the hard disk drive may break down by mechanical vibration, shock, etc.

Tightening torque:  $98 \times 10^{-2} \text{ N} \cdot \text{m}$  { 10 kgf · cm }



### • Attachment of inner rails

4. Pull out the inner rails from the two intermediate rails.
5. While pressing the stopper of the inner rail in the direction of the arrow A in the figure, pull out it in the direction of the arrow B. (Pull out the other inner rail in the same way.)

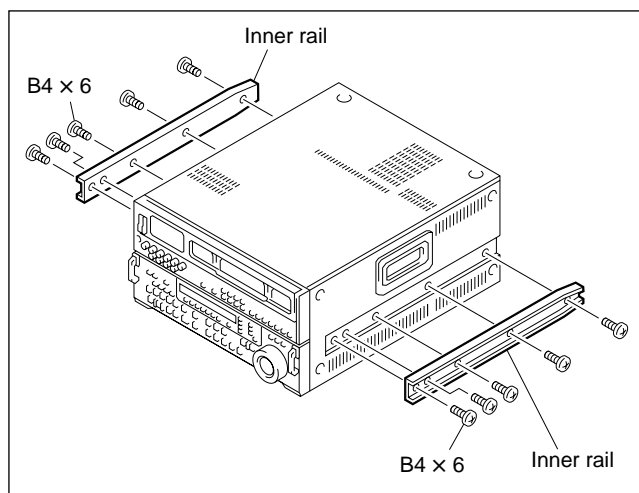


6. Remove the ten screws from both sides (left and right) of the unit as shown in the figure below.
7. With the removed screws in the step (6), attach the two inner rails to both sides (left and right) of unit.

Tightening torque:  $120 \times 10^{-2} \text{ N} \cdot \text{m}$  { 12.2 kgf · cm }

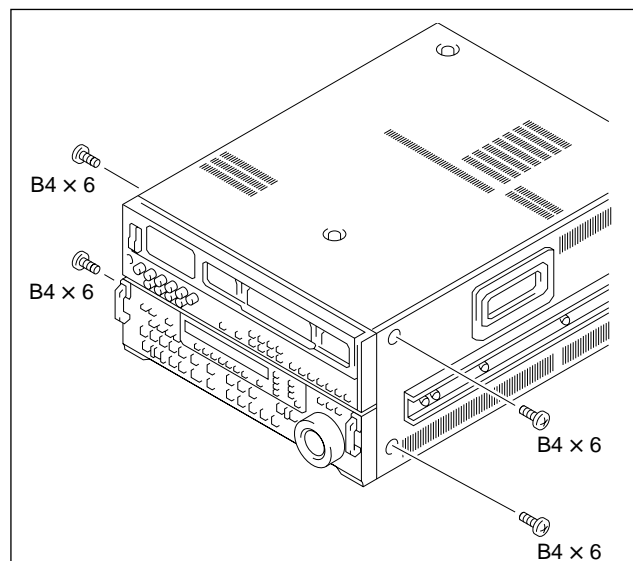
#### Note

Be sure to use the (B4 × 6) screws when fixing the inner rail. If other screws are used, a failure occurs in the operation of the unit.



### • Attachment of rack angles (handles)

8. Remove the four screws from both sides (left and right) of the unit.



#### Note

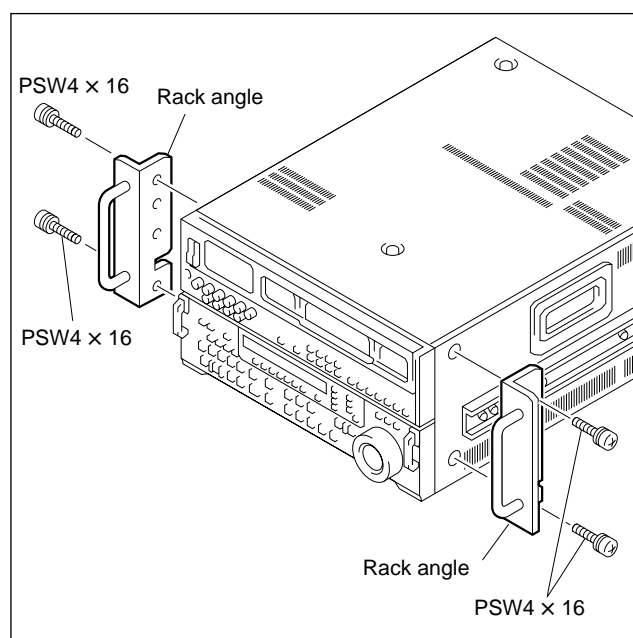
Keep these screws .

Be sure to use these screws when directly fixing the side panel without the rack angles.

The use of longer screws such as the screws (PSW4 × 16) for fixing the rack angles will cause a malfunction of the unit.

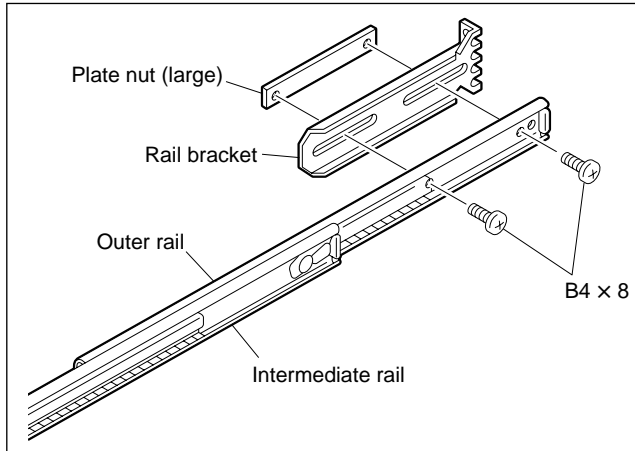
9. Attach the two rack angles to both sides (left and right) of the unit with four screws (PSW4 × 16).

Tightening torque:  $120 \times 10^{-2} \text{ N} \cdot \text{m}$  { 12.2 kgf · cm }

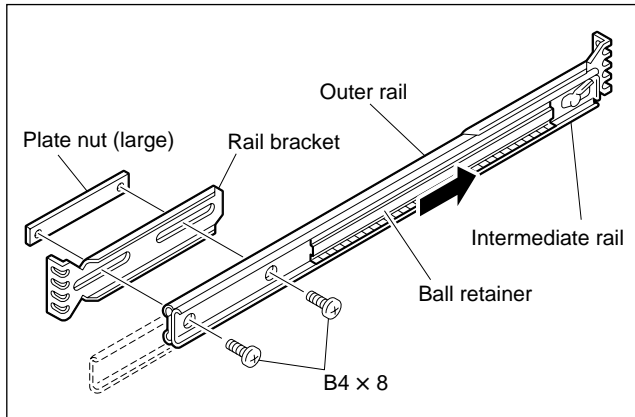


### • Temporary attachment of rail brackets

10. After sliding the outer rail and the intermediate rail as shown in the figure, loosely attach the rail bracket to the outer rail with a plate nut (large) and two screws. (Loosely attach the rail bracket to the other outer rail in the same way.)



11. After sliding the ball retainer as shown in the figure, loosely attach the rail bracket to the outer rail with a plate nut (large) and two screws. (Loosely attach the rail bracket to the other outer rail in the same way.)

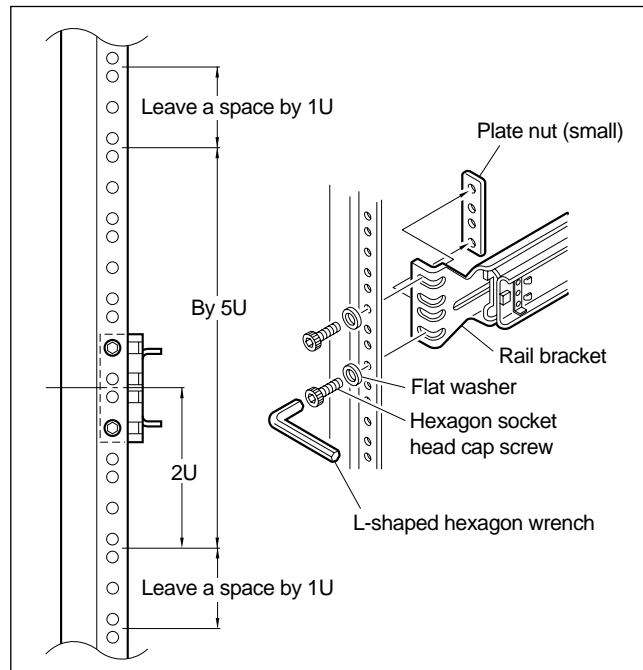


### • Attachment of outer rails

12. As shown in the figure, loosely attach the outer rails on both sides (left and right) to the 2U position from the bottom of the space by 5U for installing this unit, with eight hexagon socket head cap screws and eight flat washers (front and rear, and right and left positions).

#### CAUTION

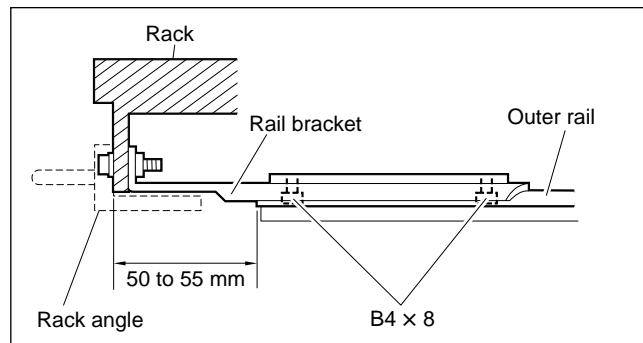
Leave each space on the top and bottom of this unit by 1U to reduce an increase in the internal temperature of this unit.



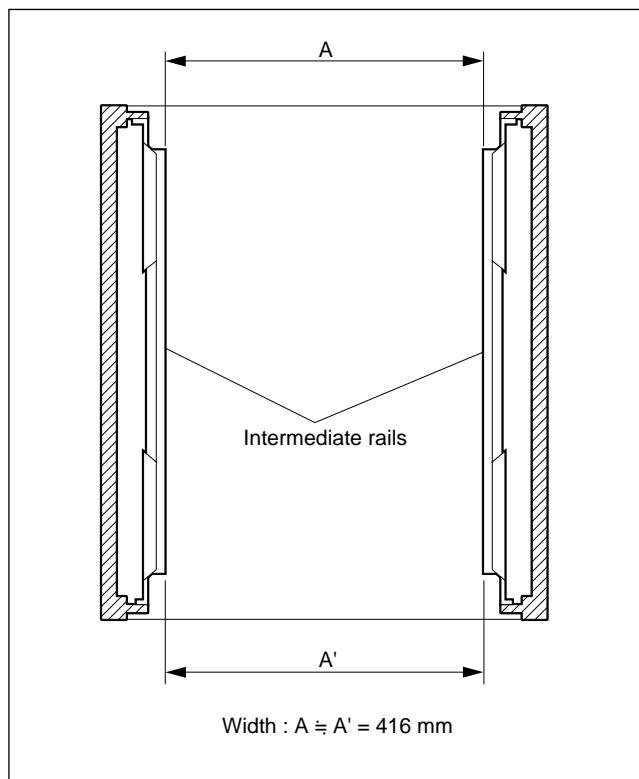
13. As shown in the following figure, adjust the each front-side position of outer rails on both sides (left and right) so that the distance from the surface of the rack to the tip of the rail becomes within the range of 50 to 55 mm.

14. Fully tighten the eight screws (B4 x 8) fixing the four rail brackets.

Tightening torque:  $120 \times 10^{-2} \text{ N} \cdot \text{m}$  { 12.2 kgf · cm }



15. Check that the two intermediate rails attached to the rack are parallel.



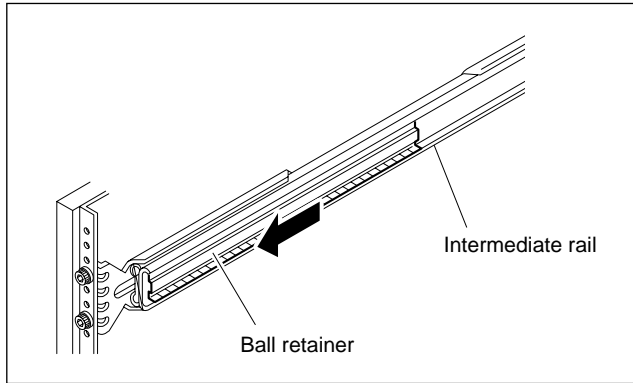
16. Using the L-shaped hexagon wrench, fully tighten the hexagon socket head cap screws (four positions, total eight) to fix the two outer rails to the rack.

## • Mounting in rack

### CAUTION

Be sure to carry the unit by the two persons or more.

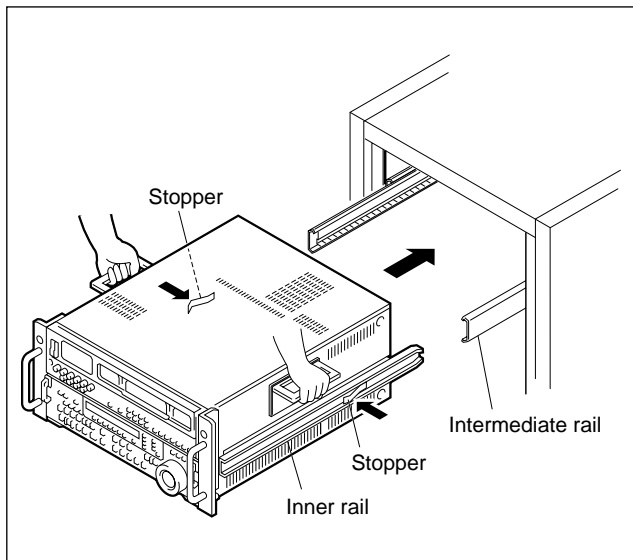
17. Slide each ball retainer of intermediate rails on both sides (left and right) in the direction of the arrow.



18. Pull equal length of each rail on both sides out.
19. Lift the unit holding the handles, slowly insert the inner rails into the intermediate rails.
20. While pressing the stoppers on the both sides (left and right), slowly push the unit into the rack.

### Note

Be careful not to catch your finger or hand in rack mount rail.



21. Slide the unit in and out from the rack about three times and check that the slide rails move smoothly. If they are not smoothly, demount the unit and go back to “Attaching outer rails” (step 12).

### CAUTION

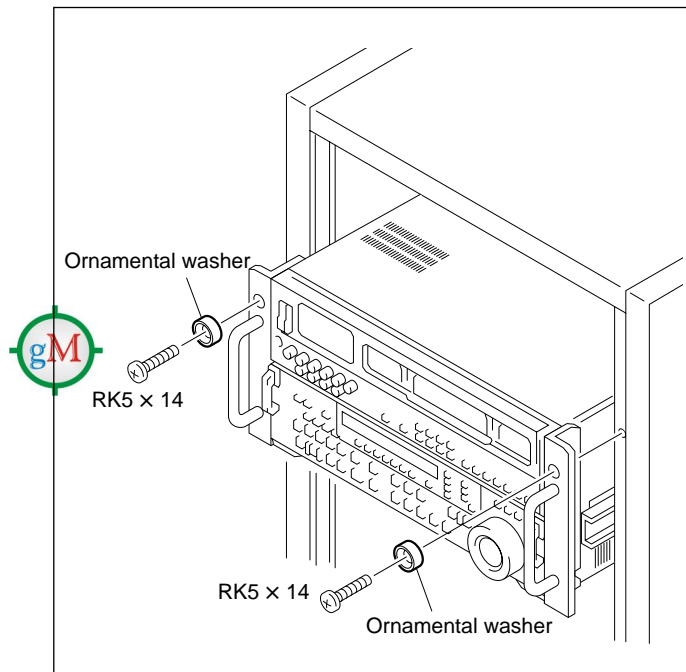
When demounting the unit, carry it by the two persons or more.

### Note

This unit does not have the feet in this operation. Put down this unit on the floor or other, being careful not to give a shock to it.

22. Fix the unit to the rack with two screws and two ornamental washers.

Tightening torque:  $120 \times 10^{-2} \text{ N} \cdot \text{m}$  {12.2 kgf · cm}



## 1-7. Matching Connectors and Cables

When external cables are connected to the connector of this unit, the hardware listed below (or equivalents) must be used.

Panel indication	Matching connector (cable)	Sony part No.
VIDEO INPUT	BNC 75Ω, MALE	—
VIDEO OUTPUT	BNC 75Ω, MALE	—
DIGITAL INPUT	BNC 75Ω, MALE <sup>(Note1)</sup>	—
DIGITAL OUTPUT	BNC 75Ω, MALE <sup>(Note1)</sup>	—
AUDIO INPUT	XLR 3P, MALE	1-508-084-00
AUDIO OUTPUT	XLR 3P, FEMALE	1-508-083-00
AES/EBU <sup>(Note2)</sup>	BNC 75Ω, MALE <sup>(Note3)</sup>	—
TIME CODE IN	XLR 3P, MALE	1-508-084-00
TIME CODE OUT	XLR 3P, FEMALE	1-508-083-00
MONITOR OUTPUT	XLR 3P, FEMALE	1-508-083-00
VIDEO CONTROL	D-SUB 15P, FEMALE and JUNCTION SHELL 15P	1-561-610-21 1-561-929-00
RS-232C	D-SUB 25P, MALE	1-566-356-11
REMOTE (9P)	9P remote control cable (RCC-G series) or D-SUB 9P, MALE and JUNCTION SHELL 9P	—  1-560-651-00 1-561-749-00
SCSI <sup>(Note5)</sup>	Differential 68P (SCSI-2) cable or SCSI terminal connector	1-769-670-31 (Supplied with BKNW-116)  See Note 4.
PHONE <sup>(Note6)</sup>	JM-60 stereo phone plug	—

Note 1: Coaxial cable length : max. 200 m (Reference value based on DNW series)

It is recommended to connect the BELDEN8281 cable or equivalent to this connector.

Note 2: With optional kit BKNW-105.

Note 3: Coaxial cable length : max. 600 m (Reference value based on DNW series)

It is recommended to connect the BELDEN8281 cable or equivalent to this connector.

Note 4: Two types of the SCSI terminal connector are used. The SCSI terminal connector to be used depends on the type of the SSX board used in the unit.

SSX board : SCSI terminal connector

SSX-1 board : 1-774-818-11

SSX-2 board : 1-794-076-11

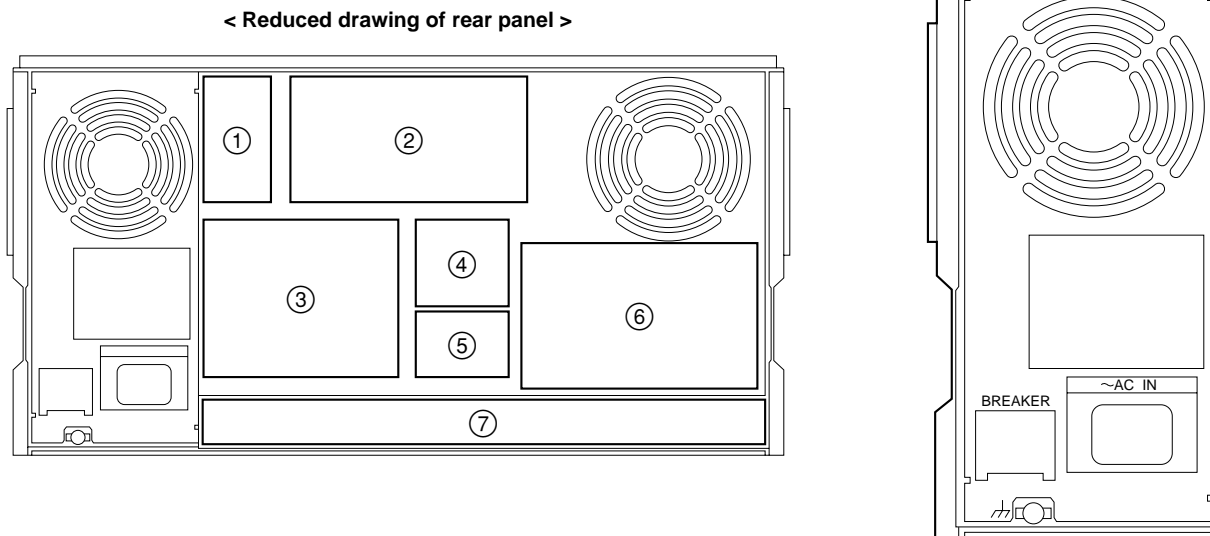
The difference of the SSX boards depends on the type of the internal hard disk drive.

Note 5: Connects the disk array cable supplied with BKNW-116 (extended hard disk unit).

If not, connect the SCSI terminal connector supplied with this unit.

Note 6: It exists on the front (upper control panel).

## 1-8. Signal Inputs and Outputs



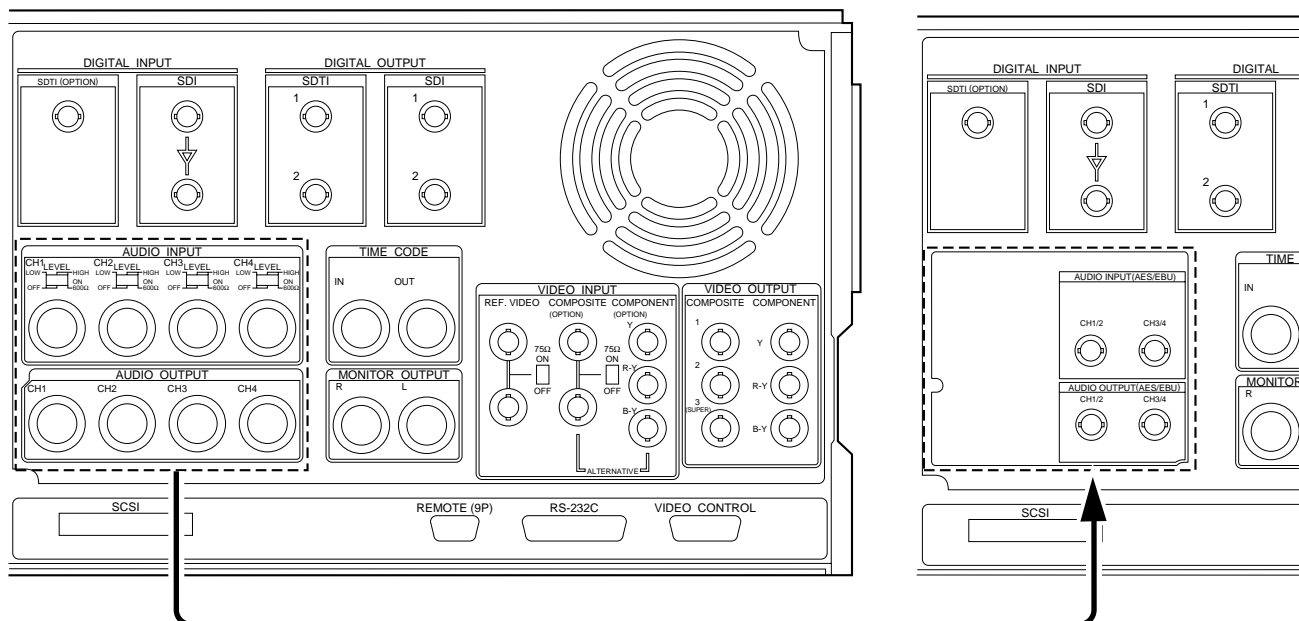
### Remote connector

⑦ SCSI	68P connector Differential type bus (SCSI-2)
⑦ REMOTE (9P)	D-SUB 9P connector (RS-422A interface) Remote control
⑦ RS-232C	D-SUB 25P connector (RS-232C interface) for ISR (Interactive Status Reporting)
⑦ VIDEO CONTROL	D-SUB 15P connector for a TBC remote controller (BVR-50) connection

### Input connector

① DIGITAL INPUT, SDTI (for DNW-A100/A100P only)	BNC × 1 (Optional kit BKNW-103) Serial data transport interface (270 Mbit/s), complies with SMPTE 305M
② DIGITAL INPUT, SDI	BNC × 1 (active through out × 1) Serial digital interface (270 Mbit/s), complies with SMPTE 259M & ITU-R BT.656
③ AUDIO INPUT (Standard)	XLR3-pin × 4 (1 set : CH1, CH2, CH3, and CH4) Analog audio 4 channels LOW OFF : -60 dBu, high impedance, balanced HIGH OFF : +4 dBu (Standard), high impedance, balanced HIGH ON : +4 dBm (Standard), 600 Ω termination, balanced
AUDIO INPUT (AES/EBU) (with optional kit BKNW-105)	BNC × 2 (1 set : CH1/2 and CH3/4) Digital audio 4 channels AES/EBU format, complies with AES-3id-1995
④ TIME CODE IN	XLR3-pin × 1 Time code 0.5 to 18 V p-p, 10 kΩ, balanced
⑥ VIDEO INPUT, REF.VIDEO	BNC × 2 in loop through connection Outside reference video signal (Black burst or composite sync) 0.3 V p-p, 75 Ω, sync negative
⑥ VIDEO INPUT, COMPOSITE (Usable with optional board BKDW-505/506)	BNC × 2 in loop through connection Analog composite video 1.0 V p-p, 75 Ω, sync negative
⑥ VIDEO INPUT, COMPONENT (Usable with optional board BKNW-104)	BNC × 3 (1 set : Y, R-Y, and B-Y) Analog component video Y : 1.0 V p-p, 75 Ω, sync negative R-Y/B-Y : 0.7 V p-p, 75 Ω

&lt; Rear panel &gt;



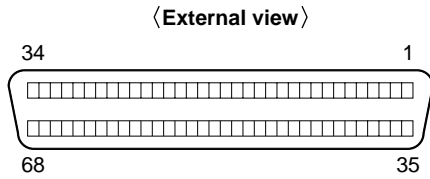
**Note** This figure is for DNW-A100 with BKNW-103.

(With optional kit BKNW-105)

### Output connector

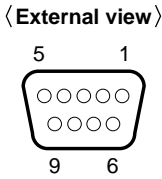
② DIGITAL OUTPUT, SDTI (for DNW-A100/A100P only)	BNC × 2 Serial data transport interface (270 Mbit/s), complies with SMPTE 305M
② DIGITAL OUTPUT, SDI	BNC × 2 Serial digital interface (270 Mbit/s), complies with SMPTE 259M & ITU-R BT.656
③ AUDIO OUTPUT (Standard)	XLR3-pin × 4 (1 set : CH1, CH2, CH3, and CH4) Analog audio 4 channels +4 dBm (Standard) (600 Ω load), low impedance, balanced
AUDIO OUTPUT (AES/EBU) (with optional kit BKNW-105)	BNC × 2 (1 set : CH1/2 and CH3/4) Digital audio 4 channels AES/EBU format, complies with AES-3id-1995
④ TIME CODE OUT	XLR3-pin × 1 Time code 2.2 V p-p, low impedance, balanced
⑤ MONITOR OUTPUT	XLR3-pin × 2 (1 set : R and L) Analog audio +4 dBm (Standard) (600 Ω load), low impedance, balanced
⑥ VIDEO OUTPUT, COMPOSITE	BNC × 3 (including 1 for character superimpose) Analog composite video 1.0 V p-p, 75 Ω, sync negative
⑥ VIDEO OUTPUT, COMPONENT	BNC × 3 (1 set : Y, R-Y, and B-Y) Analog component video Y : 1.0 V p-p, 75 Ω, sync negative R-Y/B-Y : 0.7 V p-p, 75 Ω
PHONE (Upper control panel)	JM-60 stereo phone jack Analog audio up to -12 dBu (8 Ω load), unbalanced

SCSI: 68-pin (female)



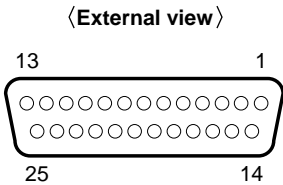
Pin No.	Signal	Pin No.	Signal
1	+DB(12)	35	−DB(12)
2	+DB(13)	36	−DB(13)
3	+DB(14)	37	−DB(14)
4	+DB(15)	38	−DB(15)
5	+DB(P1)	39	−DB(P1)
6	GND	40	GND
7	+DB(0)	41	−DB(0)
8	+DB(1)	42	−DB(1)
9	+DB(2)	43	−DB(2)
10	+DB(3)	44	−DB(3)
11	+DB(4)	45	−DB(4)
12	+DB(5)	46	−DB(5)
13	+DB(6)	47	−DB(6)
14	+DB(7)	48	−DB(7)
15	+DB(P)	49	−DB(P)
16	DIFFSENS	50	GND
17	TERMPWR	51	TERMPWR
18	TERMPWR	52	TERMPWR
19	RESERVED	53	RESERVED
20	+ATN	54	−ATN
21	GND	55	GND
22	+BSY	56	−BSY
23	+ACK	57	−ACK
24	+RST	58	−RST
25	+MSG	59	−MSG
26	+SEL	60	−SEL
27	+C/D	61	−C/D
28	+REQ	62	−REQ
29	+I/O	63	−I/O
30	GND	64	GND
31	+DB(8)	65	−DB(8)
32	+DB(9)	66	−DB(9)
33	+DB(10)	67	−DB(10)
34	+DB(11)	68	−DB(11)

REMOTE (9P): 9-pin (female)



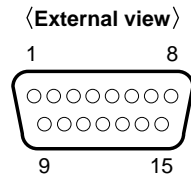
Pin No.	Signal
1	GND
2	RM TX(−)
3	RM RX(+)
4	GND
5	PRIORITY
6	GND
7	RM TX(+)
8	RM RX(−)
9	GND

RS-232C: 25-pin (female)



Pin No.	Signal
1	FG ; Frame Ground
2	TXD ; Transmitted Data (Output)
3	RXD ; Received Data (Input)
4	RTS ; Request to Send (Output)
5	CTS ; Clear to Send (Input)
6	DSR ; Data Set Ready (Input)
7	SG ; Signal Ground
8	DCD ; Data Carrier Detect (Input)
9 to 19	NC
20	DTR ; Data Terminal Ready (Output)
21 to 25	NC



**VIDEO CONTROL: 15-pin (male)**

Pin No.	Signal	Terminal voltage (V)
1	SYNC CONT (Input)	−5 to +5
2	HUE CONT (Input)	−5 to +5
3	SC CONT (Input)	−5 to +5
4	VIDEO LEVEL CONT (Input)	−5 to +5
5	SETUP CONT (Input)	−5 to +5
6	CHROMA LEVEL CONT (Input)	−5 to +5
7	REG −12V (Output)	−12
8	GND	—
9 to 12	NC	—
13	Y/C DELAY CONT (Input)	−5 to +5
14	NC	—
15	REG +12V (Output)	+12

**1-9. Switch Settings on Connector Panel**

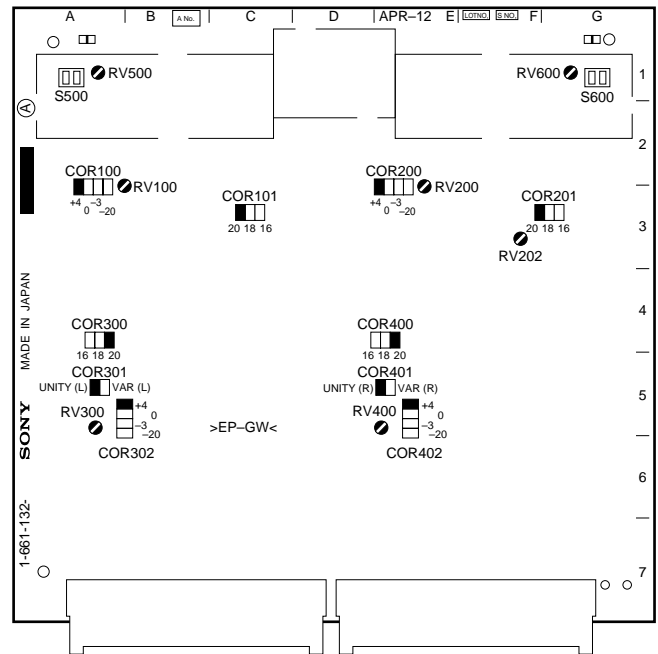
When the unit is installed, be sure to perform the following setup.

Refer to the operation manual “Section 2 Location and Function of Parts” for setup.

- Analog audio input level/600  $\Omega$  termination switches
- 75  $\Omega$  termination switch of reference video input
- 75  $\Omega$  termination switch of composite video input (Operates when equipping with optional board BKDW-505/506.)

# 1-10. Switch and Shorting Plug Setting on PC Boards

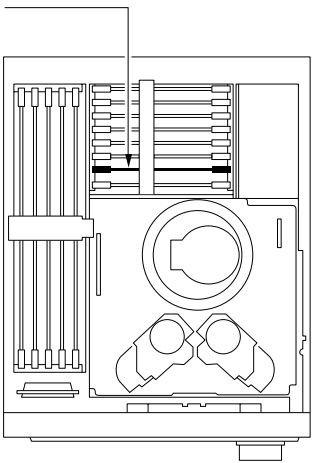
## 1-10-1. APR-12 Board



APR-12 Board (Side A)

### Note

Refer to “2-13. Pulling Out/ Insertion of Plug-in Board” for pulling out and insertion of board.



< Top View >

### HEAD TUNE switch (For Betacam/Betacam SP longitudinal audio playback)

It is not necessary to change the setting of this switch, when installing.

Channel	Ref. No.	Description
CH1	S500	By coupling with RV500, adjust the CH1 head amp high frequency response. This switch is used in audio head dumping adjustment. When the unit is shipped, this switch is set to the position based on the adjustment condition.
CH2	S600	By coupling with RV600, adjust the CH2 head amp high frequency response. This switch is used in audio head dumping adjustment. When the unit is shipped, this switch is set to the position based on the adjustment condition.

### Audio input level (CH1, CH2) setting

Input levels (CH3, CH4) are set on the APR-13 board.

Channel	Ref. No.	Display	Input level (dBm/600 Ω) [ ]: Factory setting				Fine adjustment
			[+4]	0	−3	−20	
CH1	COR100	+4	Short	Open	Open	Open	RV100
		0	Open	Short	Open	Open	
		−3	Open	Open	Short	Open	
		−20	Open	Open	Open	Short	
CH2	COR200	+4	Short	Open	Open	Open	RV200
		0	Open	Short	Open	Open	
		−3	Open	Open	Short	Open	
		−20	Open	Open	Open	Short	

**Audio input headroom (CH1, CH2) setting**

Input headrooms (CH3, CH4) are set on the APR-13 board.

Channel	Ref. No.	Display	Input headroom (dB) [ ]: Factory setting			Fine adjustment
			[20]	18	16	
CH1	COR101	20	Short	Open	Open	RV100
		18	Open	Short	Open	
		16	Open	Open	Short	
CH2	COR201	20	Short	Open	Open	RV200
		18	Open	Short	Open	
		16	Open	Open	Short	

**Monitor output level setting**

Channel	Ref. No.	Display	Output level (dBm/600 Ω) [ ]: Factory setting				Fine adjustment
			[+4]	0	−3	−20	
L	COR302	+4	Short	Open	Open	Open	RV300
		0	Open	Short	Open	Open	
		−3	Open	Open	Short	Open	
		−20	Open	Open	Open	Short	
R	COR402	+4	Short	Open	Open	Open	RV400
		0	Open	Short	Open	Open	
		−3	Open	Open	Short	Open	
		−20	Open	Open	Open	Short	

**Monitor output headroom setting**

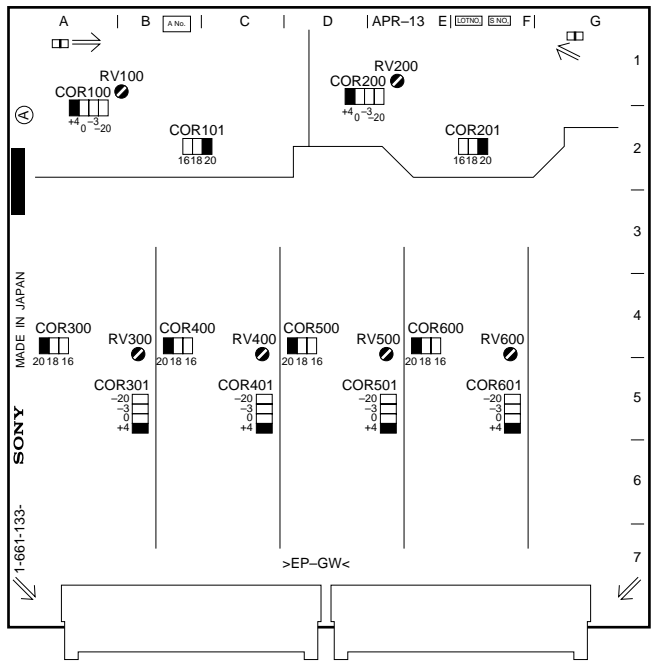
Channel	Ref. No.	Display	Output headroom (dB) [ ]: Factory setting			Fine adjustment
			[20]	18	16	
L	COR300	20	Short	Open	Open	RV300
		18	Open	Short	Open	
		16	Open	Open	Short	
R	COR400	20	Short	Open	Open	RV400
		18	Open	Short	Open	
		16	Open	Open	Short	

**Selecting fixed or variable monitor output level**

When the level variable is selected, the level is adjusted with the PHONE level control.

Channel	Ref. No.	Display	Monitor output level [ ]: Factory setting	
			[Fixed]	Variable
L	COR301	UNITY(L)	Short	Open
		VAR(L)	Open	Short
R	COR401	UNITY(R)	Short	Open
		VAR(R)	Open	Short

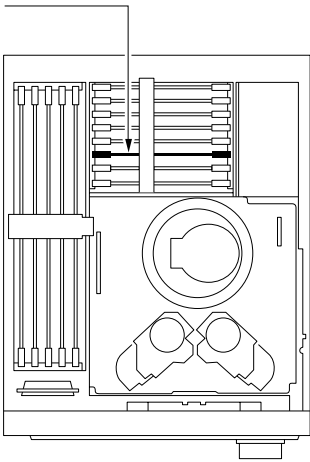
1-10-2. APR-13 Board



APR-13 Board (Side A)

**Note**

Refer to “2-13. Pulling Out/ Insertion of Plug-in Board” for pulling out and insertion of board.



< Top View >

**Audio input level (CH3, CH4) setting**

Audio input levels (CH1, CH2) are set on the APR-12 board.

Channel	Ref. No.	Display	Input level (dBm/600 Ω) [ ]: Factory setting				Fine adjustment
			[+4]	0	−3	−20	
CH3	COR100	+4	Short	Open	Open	Open	RV100
		0	Open	Short	Open	Open	
		−3	Open	Open	Short	Open	
		−20	Open	Open	Open	Short	
CH4	COR200	+4	Short	Open	Open	Open	RV200
		0	Open	Short	Open	Open	
		−3	Open	Open	Short	Open	
		−20	Open	Open	Open	Short	

**Audio input headroom (CH3, CH4) setting**

Input headrooms (CH1, CH2) are set on the APR-12 board.

Channel	Ref. No.	Display	Input headroom (dB) [ ]: Factory setting			Fine adjustment
			[20]	18	16	
CH3	COR101	20	Short	Open	Open	RV100
		18	Open	Short	Open	
		16	Open	Open	Short	
CH4	COR201	20	Short	Open	Open	RV200
		18	Open	Short	Open	
		16	Open	Open	Short	

**Audio output level setting**

Channel	Ref. No.	Display	Output level (dBm/600 $\Omega$ ) [ ]: Factory setting				Fine adjustment
			[+4]	0	−3	−20	
CH1	COR301	+4	Short	Open	Open	Open	RV300
		0	Open	Short	Open	Open	
		−3	Open	Open	Short	Open	
		−20	Open	Open	Open	Short	
CH2	COR401	+4	Short	Open	Open	Open	RV400
		0	Open	Short	Open	Open	
		−3	Open	Open	Short	Open	
		−20	Open	Open	Open	Short	
CH3	COR501	+4	Short	Open	Open	Open	RV500
		0	Open	Short	Open	Open	
		−3	Open	Open	Short	Open	
		−20	Open	Open	Open	Short	
CH4	COR601	+4	Short	Open	Open	Open	RV600
		0	Open	Short	Open	Open	
		−3	Open	Open	Short	Open	
		−20	Open	Open	Open	Short	

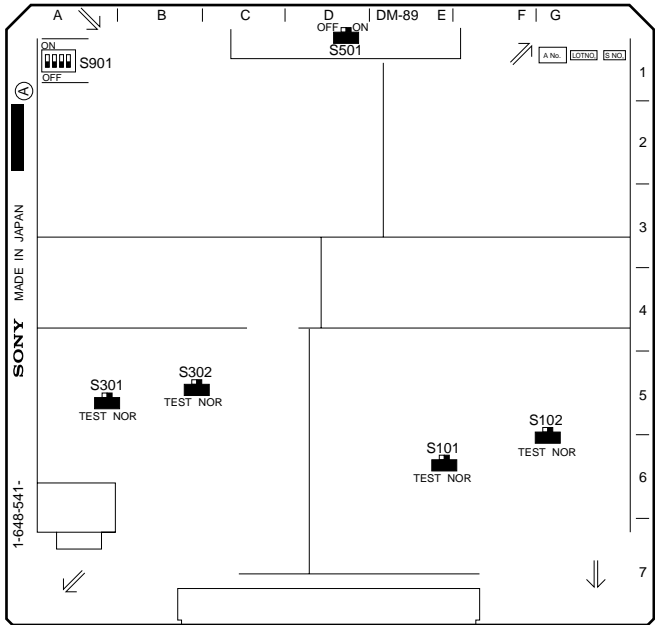
**Audio output headroom setting**

Channel	Ref. No.	Display	Output headroom (dB) [ ]: Factory setting			Fine adjustment
			[20]	18	16	
CH1	COR300	20	Short	Open	Open	RV300
		18	Open	Short	Open	
		16	Open	Open	Short	
CH2	COR400	20	Short	Open	Open	RV400
		18	Open	Short	Open	
		16	Open	Open	Short	
CH3	COR500	20	Short	Open	Open	RV500
		18	Open	Short	Open	
		16	Open	Open	Short	
CH4	COR600	20	Short	Open	Open	RV600
		18	Open	Short	Open	
		16	Open	Open	Short	

1-10-3. DM-89 Board

**Note**

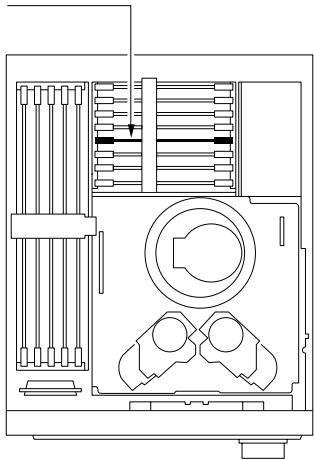
Never change the settings of the factory use switches.



DM-89 Board (Side A)

**Note**

Refer to “2-13. Pulling Out/ Insertion of Plug-in Board” for pulling out and insertion of board.



< Top View >

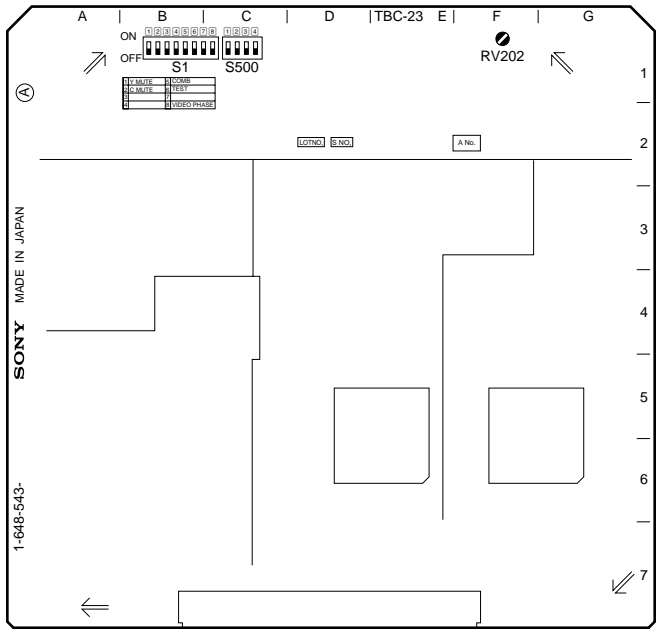
DM-89 board switch

Switch No.	Name	Description	Factory setting
S101	Y-RF LPF & EQ TEST (Y-RF low-pass filter & equalizer test)	The Y-RF low-pass filter & equalizer test signal connection switch To adjust: Select the TEST position. Connect the input signal to TP103. (GND to E102)	NORMAL POSITION
S102	—————	Factory use	NORMAL POSITION
S301	C-RF LPF & EQ TEST (C-RF low-pass filter & equalizer test)	The C-RF low-pass filter & equalizer test signal connection switch To adjust: Select the TEST position. Connect the input signal to TP303. (GND to E302)	NORMAL POSITION
S302	—————	Factory use	NORMAL POSITION
S501	—————	Factory use	ON
S901	1   4	Factory use	OFF (OPEN)

### 1-10-4. TBC-23 Board

**Note**

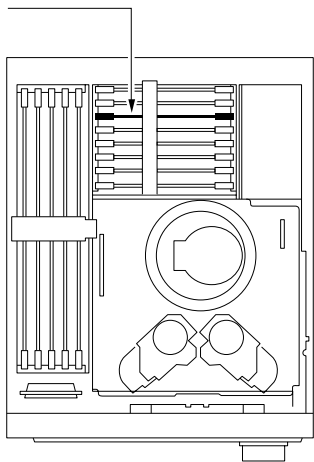
Never change the settings of the factory use switches.



TBC-23 Board (Side A)

**Note**

Refer to “2-13. Pulling Out/ Insertion of Plug-in Board” for pulling out and insertion of board.



< Top View >

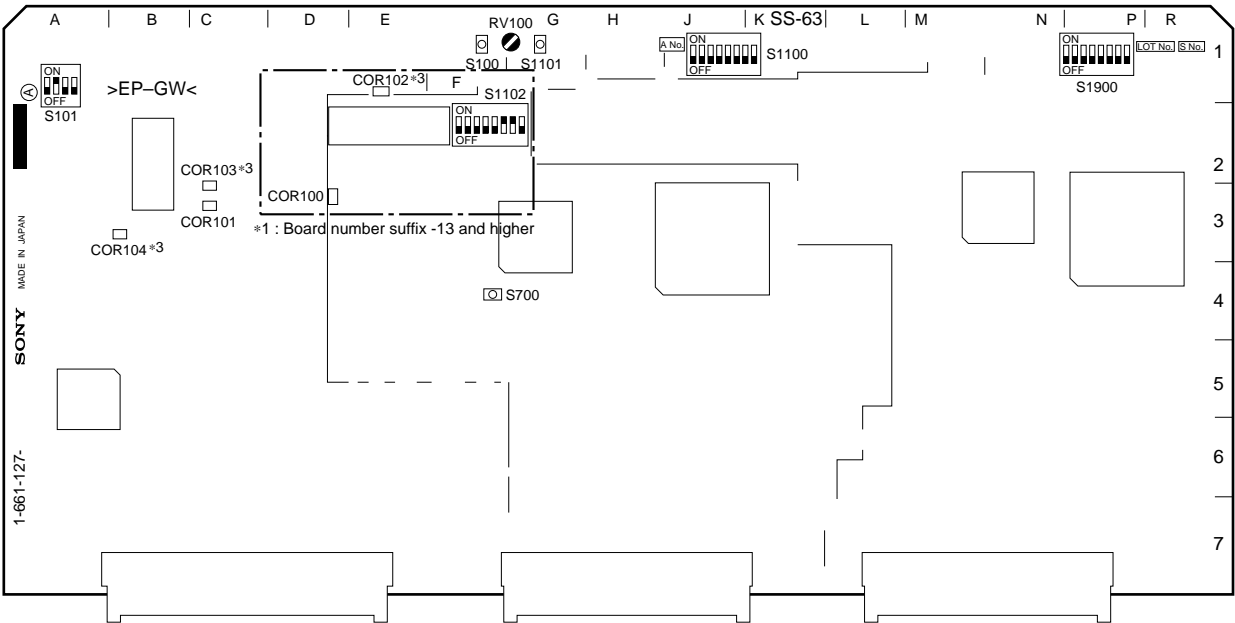
#### TBC-23 board switch

Switch No.	Name	Description	Factory setting
S1	1	Y MUTE	OFF (OPEN) : Normal mode ON (CLOSE) : Muting luminance signal
	2	C MUTE	OFF (OPEN) : Normal mode ON (CLOSE) : Muting color difference signal
	3	————	Factory use
	4	————	Factory use
	5	COMB	Selection whether to select a comb filter when the color difference signal has significant line crawl which cannot be corrected by LCC or not. OFF (OPEN) : Comb filter OFF ON (CLOSE) : Comb filter ON
	6	TBC TEST	Selection whether to enable the TBC-23 and -24 boards self diagnostics or not. OFF (OPEN) : Normal mode ON (CLOSE) : Test (self diagnostics) mode
	7	————	Factory use
	8	VIDEO PHASE	Selection whether to use VIDEO PHASE VR or not. OFF (OPEN) : VIDEO PHASE VR (RV202) disabled ON (CLOSE) : VIDEO PHASE VR (RV202) enabled
S500	1   4	————	Factory use

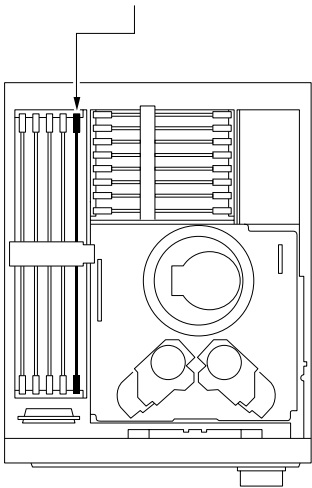
1-10-5. SS-63 Board

Note

Never change the settings of the factory use switches/shorting plugs.



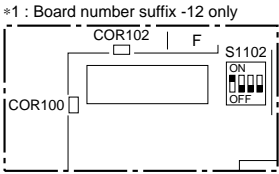
SS-63 Board (Side A)



< Top View >

Note

Refer to “2-13. Pulling Out/ Insertion of Plug-in Board” for pulling out and insertion of board.



SS-63 board shorting plug

Ref. No.	Name	Description	Factory setting
COR 100	_____	Factory use	OPEN
COR 101	_____	Factory use	OPEN
COR 102 *3	_____	Factory use	OPEN
COR 103 *3	_____	Factory use	SHORT *2
COR 104 *3	_____	Factory use	SHORT *2

\*2 : COR103 and 104 have no plug, but they are shorted by patterns.  
\*3 : Board number suffix -12 and -13.



**SS-63 board switch**

Switch No.	Name	Description	Factory setting
S100	REEL POSITION	Press this switch when changing the reel position. This switch does not operate in the state of installing the cassette compartment.	_____
S101	1	FLASH MEMORY	<div><div>Note</div>Do not change the setting of this switch during installation. Select the operation mode of flash memory. OFF (OPEN) : Normal mode ON (CLOSE) : Writing mode</div> OFF (OPEN)
	2	ANA AUTO-TRACKING	Select whether to enable auto tracking operation or not during playing back the tape recorded based on the Betacam/Betacam SP format. OFF (OPEN) : Not operate (The tracking is controlled using RV100.) ON (CLOSE) : Operates <div><div>Note</div>The Betacam SX tape playback is carried out by non-tracking operation.</div> ON (CLOSE)
	3	ANA DISABLE	Select whether to prohibit analog Betacam tape playback or not. OFF (OPEN) : Enable ON (CLOSE) : DisableOFF (OPEN)
	4	SV ERR DISABLE	<div><div>Note</div>Do not change the setting of this switch during installation. This switch selects whether to disable the detection of a malfunctional error in a servo circuit. OFF (OPEN) : Enable (normal) ON (CLOSE) : Disable</div> OFF (OPEN)
S700		SYSTEM RESET	Press this switch when resetting system control operation. _____
S1100	1	EXTENDED MENU	OFF (OPEN) : Not display extended menu of set up menu ON (CLOSE) : Displays extended menu of set up menuOFF (OPEN)
	2	MAINTENANCE MODE ACCESS	OFF (OPEN) : Not enter into maintenance mode from lower control panel ON (CLOSE) : Enters into maintenance mode from lower control panelOFF (OPEN)
	3   8	_____	Factory useOFF (OPEN)
S1101		MAINTENANCE MODE START	Press this switch when starting maintenance mode. _____
S1102		<div><div>Note</div>Never change the settings of the S1102 switch since each switch is set according to the characteristics of the unit. But set this switch according to each unit when replacing the board.</div>	
		• Board number suffix -13 and higher 1 to 6 MODEL ID SWITCH	
		DNW-A100/A100P   DNW-A50/A50P   DNW-A45/A45P	
		1: OFF (OPEN)   OFF (OPEN)   OFF (OPEN)	
		2: OFF (OPEN)   OFF (OPEN)   OFF (OPEN)	
		3: OFF (OPEN)   OFF (OPEN)   OFF (OPEN)	
		4: OFF (OPEN)   OFF (OPEN)   OFF (OPEN)	⇐
		5: OFF (OPEN)   ON (CLOSE)   ON (CLOSE)	
		6: ON (CLOSE)   OFF (OPEN)   ON (CLOSE)	
	7	J/UC, CE	OFF (OPEN): Japan model ON (CLOSE): Except Japan modelON (CLOSE)
	8	525/625	OFF (OPEN): 525/60 model ON (CLOSE): 625/50 modelDNW-A100/A50/A45 : OFF (OPEN) DNW-A100P/A50P/A45P : ON (CLOSE)
		• Board number suffix -12 only 1, 2 MODEL ID SWITCH	
		DNW-A100/A100P   DNW-A50/A50P   DNW-A45/A45P	
		1: OFF (OPEN)   ON (CLOSE)   ON (CLOSE)	⇐
		2: ON (CLOSE)   OFF (OPEN)   ON (CLOSE)	
	3	J/UC, CE	OFF (OPEN) : Japan model ON (CLOSE) : Except Japan modelON (CLOSE)
	4	525/625	OFF (OPEN) : 525/60 model ON (CLOSE) : 625/50 modelDNW-A100/A50/A45 : OFF (OPEN) DNW-A100P/A50P/A45P : ON (CLOSE)
S1900	1   8	_____	Factory useOFF (OPEN)

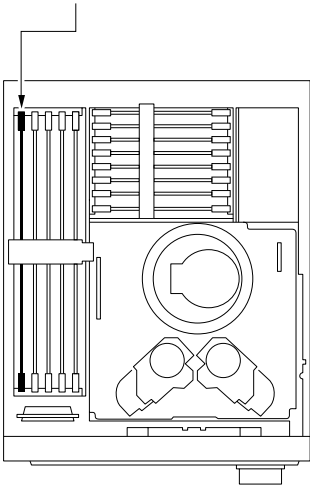
1-10-6. SSX Board

Note

Never change the settings of the factory use switches.



SSX Board (Side A)



< Top View >

Note

Refer to “2-13. Pulling Out/  
Insertion of Plug-in Board” for  
pulling out and insertion of board.

SSX board switch

Switch No.	Name	Description	Factory setting
S200	SYSTEM RESET	Press this switch to reset the operation of the SSX-1 board.	_____
S300	TEST	This switch is used for the test timing of the microcomputer on the SSX-1 board.	_____
S301	1   8	_____ Factory use	OFF (OPEN)

## 1-11. Mode Switching of Search Dial

There are two kinds of operation to switch the search dial of this unit to jog mode or shuttle mode.

### • SHUTTLE/JOG button selecting

When you press the SHUTTLE button, the digital video hybrid recorder is switched to shuttle mode.

When you press the JOG button, the digital video hybrid recorder is switched to jog mode.

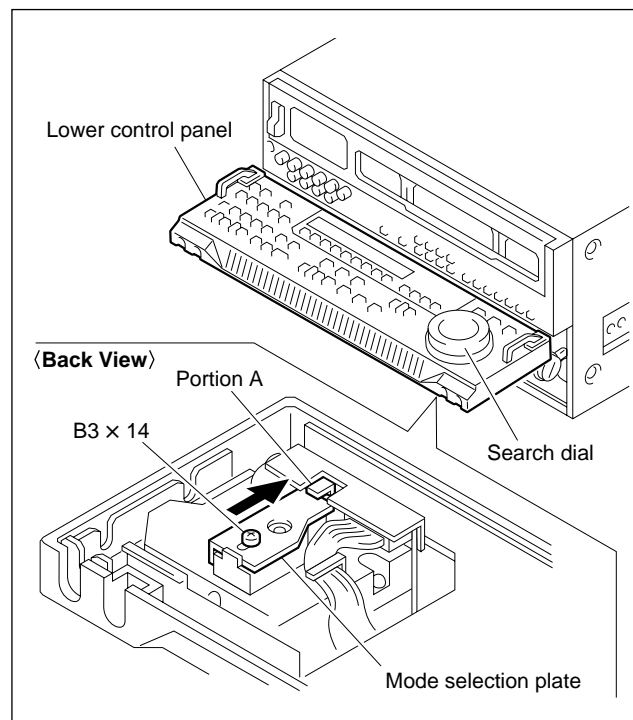
### • Search dial pressing

When you press the dial, the digital video hybrid recorder toggles between shuttle and jog modes.

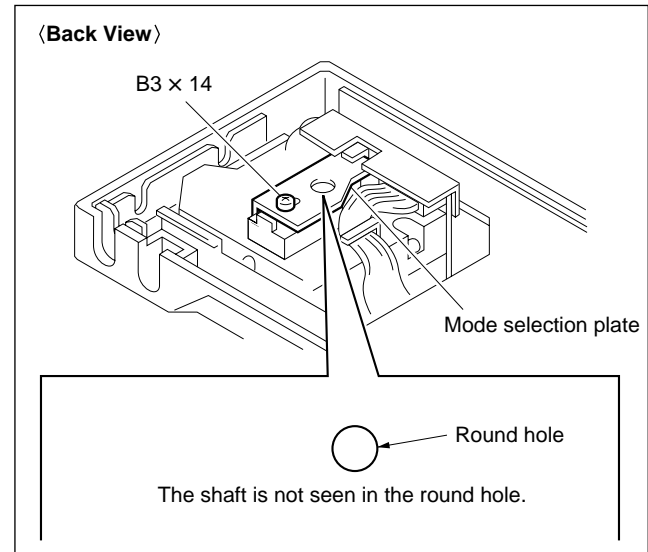
It is possible to prohibit a manner of toggling.

### Prohibiting Search Dial Pressing

1. Wait for 30 seconds after turning off the power.
2. Fix a lower control panel at 90°. (Refer to the following figure.)
3. Loosen a screw on the backside of the search dial as shown in the figure.
4. Slide the mode selection plate in the direction indicated by the arrow until it touches the portion A.

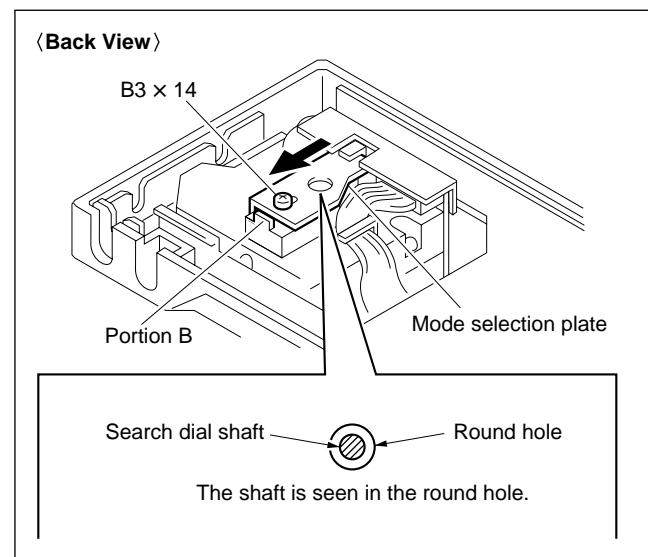


5. After checking that the shaft of the search dial is not seen in the round hole of the mode selection plate and then tighten the screw.



### Allowing Search Dial Pressing

1. Wait for 30 seconds after turning off the power.
2. Fix a lower control panel at 90°.
3. Loosen a screw on the backside of the search dial as shown in the figure.
4. Slide the mode selection plate in the direction indicated by the arrow until it touches the portion B.
5. After checking that the shaft of the search dial is seen in the round hole of the mode selection plate and then tighten the screw.



## 1-12. Setup Menu (ITEM F-Series)

This section explains the F-series items on the setup menu, which are for use during adjustment or maintenance.

For details on other series items, refer to the operation manual supplied with the unit.

### 1-12-1. Menu Operation

#### Preparation

The menus for F-series items are usually not accessible. To display them, internal switch setting for the SS-63 board is required. For details on the switch function, refer to Section 1-10.

- S1100-1/SS-63 board   ⇒  ON   (Displays the extend menu of the setup menu.)

#### Activating the menu

1. Press the MENU button.
2. Press the JOG button to enter the JOG mode.
3. Turn the search dial while pressing the PLAY button.

#### Basic operation

##### • To select ITEM

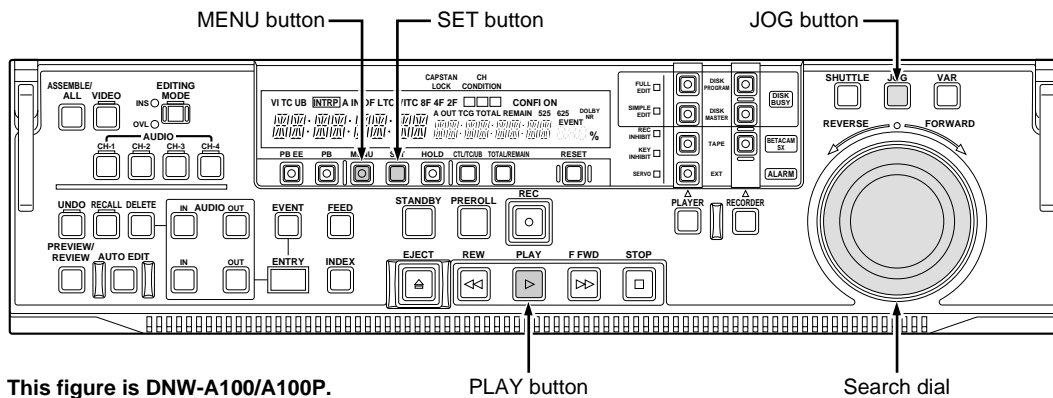
Turn the search dial while pressing the PLAY button to display the desired ITEM in the time data display area.

##### • To change DATA

Turn the search dial while pressing the JOG button.

##### • To enter the setting value

Press the SET button.



This figure is DNW-A100/A100P.

## 1-12-2. F-Series Items

No.	ITEM	DATA	Description
F01	AUDIO NR IN SP MODE	<input type="checkbox"/> ON SW	Turns on and off the Dolby NR when using a metal tape. ON: Dolby NR is turned on usually SW: Dolby NR switch is turned on and off depending on the setting of the sub control panel
			<b>Notes</b> <ul style="list-style-type: none"> <li>When using an oxide tape, follows the sub control panel switch setting regardless of the above setting.</li> <li>This item is used exclusively for analog Betacam longitudinal audio playback adjustment for 625/50 system. After adjustment is completed, return to the factory setting "ON".</li> </ul>
F02	EMERGENCY TAPE PROTECTION	<input type="checkbox"/> ENA DIS	Selects whether emergency tape protection operation is enabled or not when VTR detects error in tape transport mechanism. ENA: Tape protection operation is enabled DIS: Tape protection operation is disabled
			<b>Note</b> This item is used exclusively for servo and mechanical adjustment. After adjustment is completed, return to the factory setting "ENA".
F13	TRACKING CONTROL VIA SEARCH DIAL	<input type="checkbox"/> OFF ON	Turns on and off the tracking control operation with search dial. OFF: Tracking control with the search dial is not activated ON: Tracking control becomes active when turning the search dial in PLAY mode
			<b>Note</b> This item is used exclusively for video tracking adjustment. After adjustment is completed, return to the factory setting "OFF".
F16	DEVICE TYPE MODIFY:0H	<input type="checkbox"/> 0 1   FFFF	Determines response data to 9-pin remote command DEVICE TYPE REQUEST (00h, 11h). 0: Returns the original device type data of the unit Except 0: Returns the set values as they are: The higher-order two digits are for DATA-1 The lower-order two digits are for DATA-2
			<b>Note</b> Any selection of the above does not influence the whole VTR operation including TTP. If this item is set to values other than the factory-setting (DATA:0), the operation of the unit is not ensured under the 9-pin remote command control.
F21	PROCESS CONT VR LOCAL ENABLE	<input type="checkbox"/> OFF ON	Selects whether Process control (setup menus, knobs, and switches) is enabled or not, when LOCAL DISABLE command is received through the 9-pin remote connector or the setup menu ITEM-006: LOCAL FUNCTION ENABLE is set to "DIS" (all disable). OFF: Settings of above Process control are disabled ON: Settings of above Process control are enabled
F34	STOP PINCH OFF TIME	0 M <input type="checkbox"/> 5 M 10 M 15 M 20 M	Specifies the time at which the pinch ON condition is kept even if the PB operation is completed in the SX tape PB mode. The time is usually set to "5 M". When "0 M" is set, the pinch is turned off as soon as the PB operation is completed.
			<b>Note</b> When the pinch is turned off, it takes a few seconds to output image and sound signals during PB operation of the next time.
F35	AUDIO DITHER	<input type="checkbox"/> ON OFF	Specifies how to process the data when audio input data is recorded. ON: Processes the audio input data to be recorded by a dither method. The result is rounded and recorded in 16 bits. OFF: The audio input data of less than 17 bits is rounded down and recorded.
			<b>Note</b> Set "OFF" to record a signal accurately according to the input data (i.e., record a DOLBY AC-3 encoded signal).

## 1-13. Reference System

For each reference signal in this unit, an external reference video signal (\*1) or input video signal (\*2) is automatically selected by the setting of the OUT REF switch on the sub control panel, the setting of setup menu ITEM-309, and the operation mode (PB/EDIT/REC) of this unit. (Refer to the table below.)

For the reference signal (clock) of an analog video signal in an A/D converter, however, the analog video signal itself is used as a reference signal at all times.

Menu ITEM-309	EXT	AUTO				
OUT REF switch	_____	REF				INPUT VIDEO
Operation mode	_____	PB	EDIT (INT)	EDIT (LINE)	REC	_____
Video input A/D	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px;">External Reference Video (*1)</div> <div style="border: 1px solid black; padding: 5px;">Input Video (*2)</div> </div>					
Video output process						
Digital audio						
Servo system						
Disk system						

\*1: REF. VIDEO input

\*2: The input video signal is selected by the VIDEO INPUT SELECT button on the upper control panel.

### Note

- EDIT (INT) ; Internal Edit  
Edit of tape to hard disk
- EDIT (LINE) ; Line Edit  
This edit operation is performed for an SX format tape or hard disk only.

### Independent Recording of Audio Signal

Even if an input video signal is selected as the reference signal, the reference signal is automatically selected to an external reference video signal for the period in which the no input video signal is input. The reference signal generated in the inside of this unit is automatically selected for the period in which no external reference video signal is input.

An audio signal can be independently recorded by this system even if no reference video signal is input from the outside.

### Alarm Display for Video Input Signal and Reference Signal

#### 1. Blinking of the VIDEO INPUT SELECT indicator

The selected signal indicator blinks when signal is not entered in the input connector selected by the VIDEO INPUT SELECT button.

#### 2. Blinking of the STOP button

The button blinks when the reference signal is not locked to an input video signal.

(This function can be inhibited in setup menu ITEM-105.)

- When the OUT REF switch is set to “INPUT VIDEO”  
The STOP button blinks when the signal is not entered in the input connector selected by the VIDEO INPUT SELECT button.
- When the OUT REF switch is set to “REF”  
The STOP button blinks in either of the following cases.  
When no reference signal is input to REF VIDEO INPUT connector.  
When the reference video signal (REF.VIDEO input) is not synchronized with an input video signal selected by VIDEO INPUT SELECT button.

## 1-14. Switching between 525/625 Line Systems

---

### In the NTSC Model (DNW-A100/A50/A45)

This unit can be switched from 525/60 system to 625/50 system. The tape recorded based on the Betacam SX format of 625/50 system can be played back, and the signal of 625/50 system (except the analog composite video input) can be also recorded by switching the system. The signal of 625/50 system is output from all output connectors.

#### Importance

If the 525/625 line systems are changed, the signal that had recorded on the HDD is erased. It is impossible to bring the data back.

#### Notes

- The tape recorded based on the Betacam/Betacam SP format of 625/50 system cannot be played back in this unit.
- Analog composite video signal of 625/50 system cannot be recorded in this unit.
- External reference video signal of 625/50 system can be locked by the sync signal only, but cannot be locked by color framing in this unit.

---

### In the PAL Model (DNW-A100P/A50P/A45P)

This unit can be switched from 625/50 system to 525/60 system. The tape recorded based on the Betacam SX format of 525/60 system can be played back, and the signal of 525/60 system (except the analog composite video input) can be also recorded by switching the system. The signal of 525/60 system is output from all output connectors.

#### Importance

If the 525/625 line systems are changed, the signal that had recorded on the HDD is erased. It is impossible to bring the data back.

#### Notes

- The tape recorded based on the Betacam/Betacam SP format of 525/60 system cannot be played back in this unit.
- Analog composite video signal of 525/60 system cannot be recorded in this unit.
- External reference video signal of 525/60 system can be locked by the sync signal only, but cannot be locked by color framing in this unit.

---

### Method of Switching

Set the ITEM-013 to ON and change the mode following message which is superimposed on the video monitor.

(It is necessary that the CHARACTER switch of the sub control panel is set to ON so that the message is superimposed on the video monitor.)

Refer to the operation manual “Section 7. Menu System” for details.

## 1-15. Settings and Adjustment when Peripheral Equipment is Connected

Refer to Section 1-15-4 for setting when connecting the disk unit BKNW-116.

### 1-15-1. Time Code Setting

#### When Editing with an Editor Capable of the 1st Edit (BVE-2000 etc.)

Set the TC GENERATOR switches on the upper control panel as follows.

INT/EXT                   ⇒ INT  
 PRESET/REGEN       ⇒ PRESET  
 FREE RUN/REC RUN   ⇒ FREE RUN

#### When Editing with Direct Machine-to-Machine (VTR-to-VTR)

(1) Set the setup menu ITEM-610: REGEN CONTROL MODE to “AS&IN”.

(2) Set the TC GENERATOR switches on upper control panel as follows:

INT / EXT               ⇒ INT  
 PRESET / REGEN       ⇒ PRESET  
 FREE RUN / REC RUN   ⇒ REC RUN

### 1-15-2. VTR Constant Settings for External Editors

When using an external editor requiring the VTR constant settings together with the unit, make the setting following the table for the editor. And when the unit is switched between the 525/625 line systems, the VTR constant settings are also required. (The following are standard constants.)

Model name	525/625	VTR CONSTANT1								VTR CONSTANT2							
		Data No.								Data No.							
		1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
DNW-A100	525/60	B0	41	00	96	07	07	03	8A*	0A	07	FB	00	81	3D	FF	5A
DNW-A100P	625/50	B1	41	00	7D	07	07	03	8A*	0A	06	FB	00	83	4B	FF	4B
DNW-A50	525/60	B0	45	00	96	07	07	03	8A*	0A	07	FB	00	81	3D	FF	5A
DNW-A50P	625/50	B1	45	00	7D	07	07	03	8A*	0A	06	FB	00	83	4B	FF	4B
DNW-A45	525/60	B0	45	00	96	07	07	03	8A*	0A	07	FB	00	81	3D	FF	5A
DNW-A45P	625/50	B1	45	00	7D	07	07	03	8A*	0A	06	FB	00	83	4B	FF	4B

※: Set the data of No.8 of the VTR CONSTANT 1 to “0A” for the following editors.

- BVE-900 ROM version: less than or equal 1.08
- BVE-600 ROM version: less than or equal 1.01

#### Note

When this unit is remote-controlled by the editor, set the setup menu ITEM-401: FUNCTION MODE AFTER CUE-UP to “STOP”.



### 1-15-3. System Phase Alignment

An external reference video signal and analog composite signal (when BKDW-505/506 is used) must be input to this unit after they are adjusted so that SC-H conforms to the specification.

---

#### When Connecting to a Digital Switcher

Fundamentally, the system phase adjustment is not necessary.  
Refer to the manual of digital switcher for details.

---

#### When Connecting to a Analog Switcher

Perform the system phase adjustment referring to the manual of the analog switcher.

The system phase of this unit is adjusted by using the SYNC control and SC control of SYSTEM PHASE on the sub control panel.

#### Notes

- Be sure to adjust in PB mode.  
The system phase does not change even if the SYNC/SC control is turned in the REC mode, but it changes when the REC mode is shifted to the PB mode.
- The playback sound may be momentarily interrupted when the SYNC/SC control is turned during tape playback.

### 1-15-4. Setup Menu Setting

---

#### Video/Sync Delay Setting “ITEM-701”

Commonly, when integrating the menu into the editing system, set on “VIDEO”.  
To prevent the picture shift during EE/PB switching in the VTR-to-VTR edit operation, this setup menu is set to “VIDEO”.

---

#### Analog Component Input/Output Format Setting “ITEM-709” (525/60 system only)

The input (SUB-ITEM-0) and output (SUB-ITEM-1) sides are set to “D-1” or “B-CAM” according to the operating system, respectively.

### 1-15-5. Setting when BKNW-116 is Connected

Refer to “1-7. How to Connect Hybrid Recorder” of BKNW-116 installation manual for connecting this unit to BKNW-116.

#### **Importance**

Check the ROM version (SY1, SY2, SSX and SV) of the unit by C40: ROM VERSION of the maintenance mode before connecting to BKNW-116.

SY1A: ROM version 3.10 or higher

SY1B: ROM version 3.10 or higher

SY2: ROM version 3.01 or higher

SSX: ROM version 3.10 or higher

SV: ROM version 3.01 or higher

If the ROM version is lower than the value described above, the version-up must be required. For the version-up, contact your local Sony Sales Office/Service Center.

---

#### **BLACK file installation**

When BKNW-116 is first used after factory-shipping, maintenance menu D4 : BLACK INSTALLATION is automatically started when the power is first turned on after connection to this unit.

Be sure to install the BLACK file using this menu.

(Refer to “4-3-6. BLACK File Installation Menu (D4)”.)

---

#### **Selection of Hard Disk Drive Zone**

After connecting, it is required to change the zone of HDD so as to be available HDDs in the BKNW-116.

The zone is changed by the maintenance menu of this unit. Refer to “4-3-7. Zone Configuration Menu (D5)” for changing the zone.

## 1-16. Installation of BKDW-505/506

By installing the analog composite decoder board BKDW-505/506 in the unit, a composite video signal is converted to a digital signal, then decoded to a component digital signal.

For DNW-A100/A50/A45 ----- BKDW-505

For DNW-A100P/A50P/A45P ----- BKDW-506

### Note

If the BKNW-104 is already installed, the BKDW-505/506 can not be installed in the unit.  
When installing the BKDW-505/506, remove the BKNW-104.

### Component

- Analog composite decoder board (DEC-65 board)

### 1-16-1. Procedure

### Note

Turn off the power before starting the installation.

Check that there is not anything wrong with COMPOSITE VIDEO out picture of this unit.

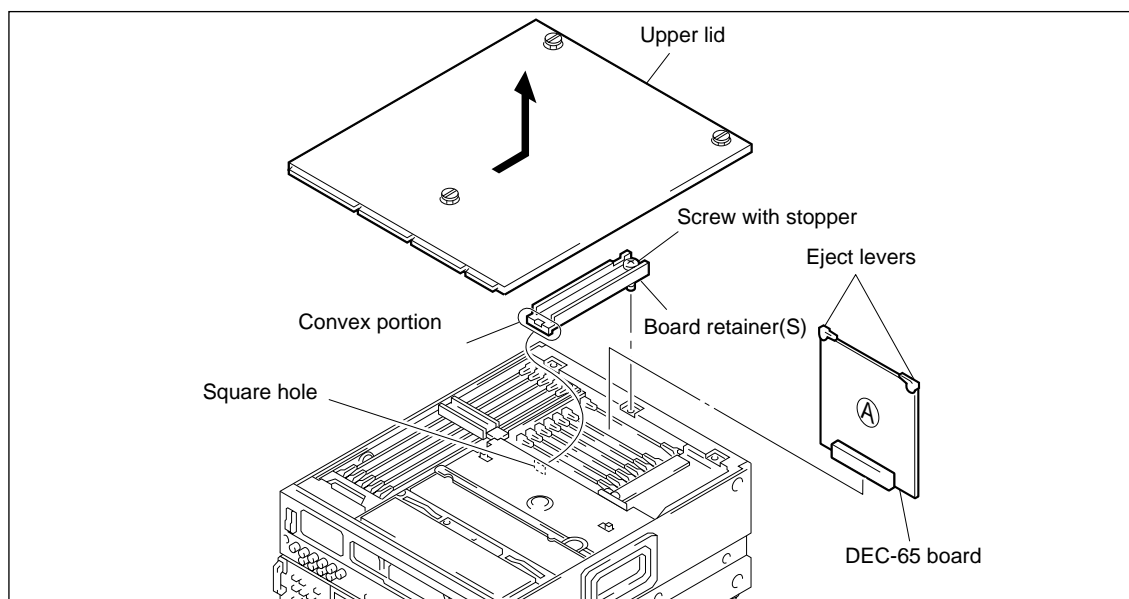
If something is wrong with it, this unit needs repair or adjustment.

- (1) Remove the upper lid (Refer to Section 2-3-1) .
- (2) Loose one screw fully, remove the board retainer (S).
- (3) If the BKNW-104 is already installed, remove the BKNW-104 (AD-105 board).  
(Refer to “2-13. Pulling Out /Insertion of Plug-in Board” for the removal.)
- (4) Install the DEC-65 board in the second slot from the rear placing the A-side towards the front.

### Note

After inserting the DEC-65 board, press the two eject levers from above simultaneously and connect the board to the connector on the mother board securely.

- (5) Perform “1-16-2. Check after Installing”.
- (6) Insert the convex portion of board retainer (S) in the square hole of chassis. Then fix the board by tightening the screw.
- (7) Reattach the upper lid.



## 1-16-2. Check after Installing

### Equipment

#### BKDW-505 (For DNW-A100/A50/A45)

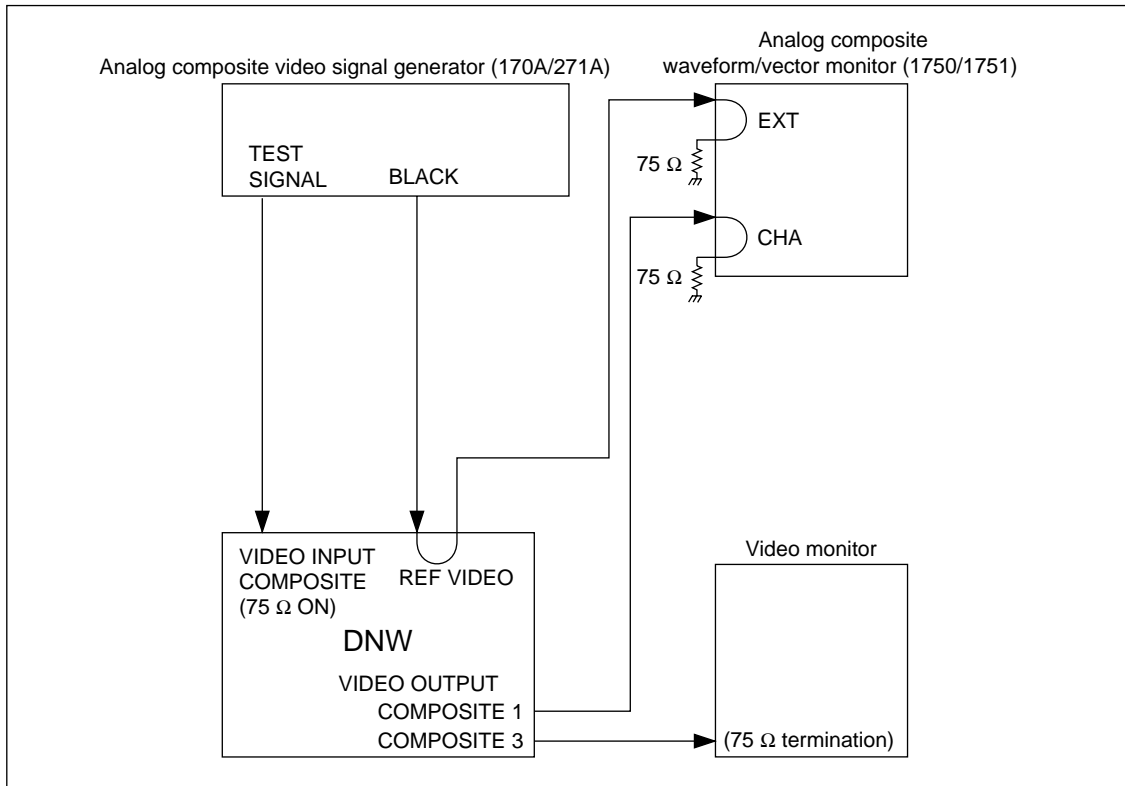
Analog composite video signal generator (TEKTRONIX TSG-170A or equivalent)  
 Analog composite waveform/vector monitor (TEKTRONIX 1750/1780R or equivalent)  
 Video monitor  
 75  $\Omega$  terminators (2 pcs)

#### BKDW-506 (For DNW-A100P/A50P/A45P)

Analog composite video signal generator (TEKTRONIX TSG-271A or equivalent)  
 Analog composite waveform/vector monitor (TEKTRONIX 1751/1781R or equivalent)  
 Video monitor  
 75  $\Omega$  terminators (2 pcs)

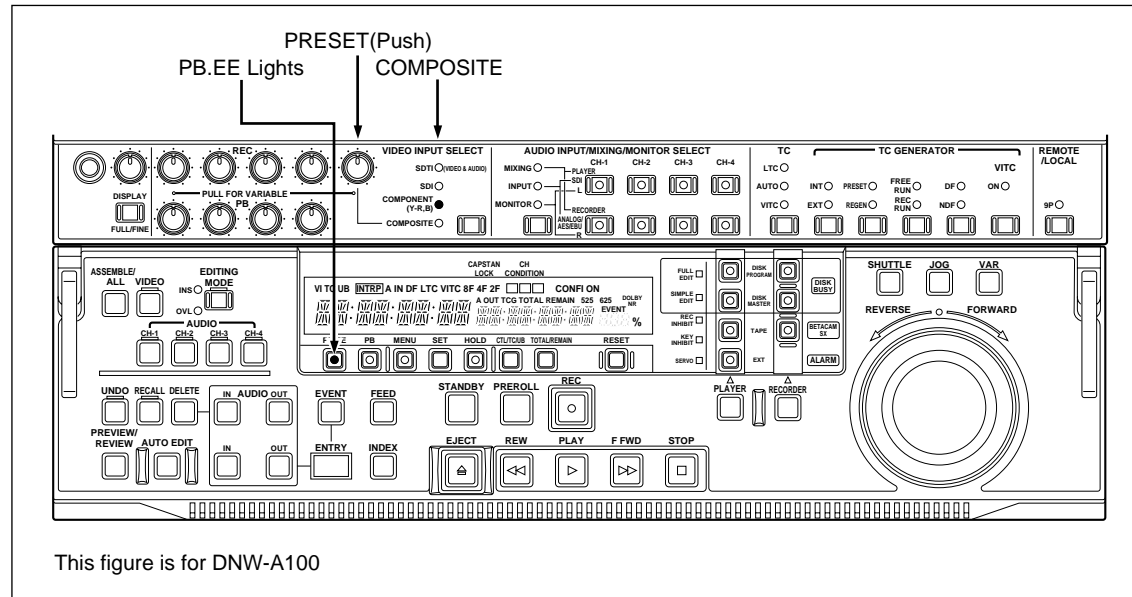
### Connection

- (1) Connect the above equipments as shown below.
- (2) Turn the 75 $\Omega$  termination switch of composite video input of the unit to ON.

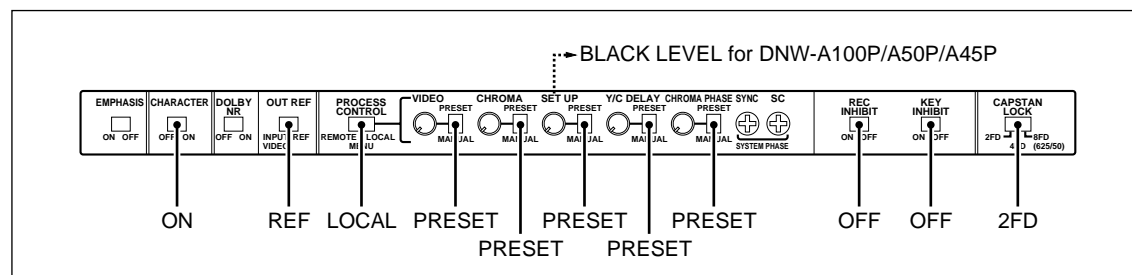


## Setting of Unit Side

Turn on the power, and set each control panel as shown below.



## Upper/Lower Control Panel



## Sub Control Panel

## Operation Method of Maintenance Mode

## 1. Entering the Maintenance Mode

Press S1101 on the SS-63 board.

## 2. Shifting to the Next Menu

- (1) Press the JOG button once to enter the JOG mode.
- (2) Turn the search dial and set the \* mark to a desired menu (mode).
- (3) Press the SET button.

### 3. Exiting from the Current Menu (Mode)

Press the MENU button.

### Note

Press the MENU button several times to exit maintenacnce mode.

#### 4. Changing the Data Value

- (1) Turn the search dial and set the \* mark to the item to adjust.
- (2) Turn the search dial while pressing the JOG button.

REVERSE direction : decrease the data value

FORWARD direction : increase the data value

### Note

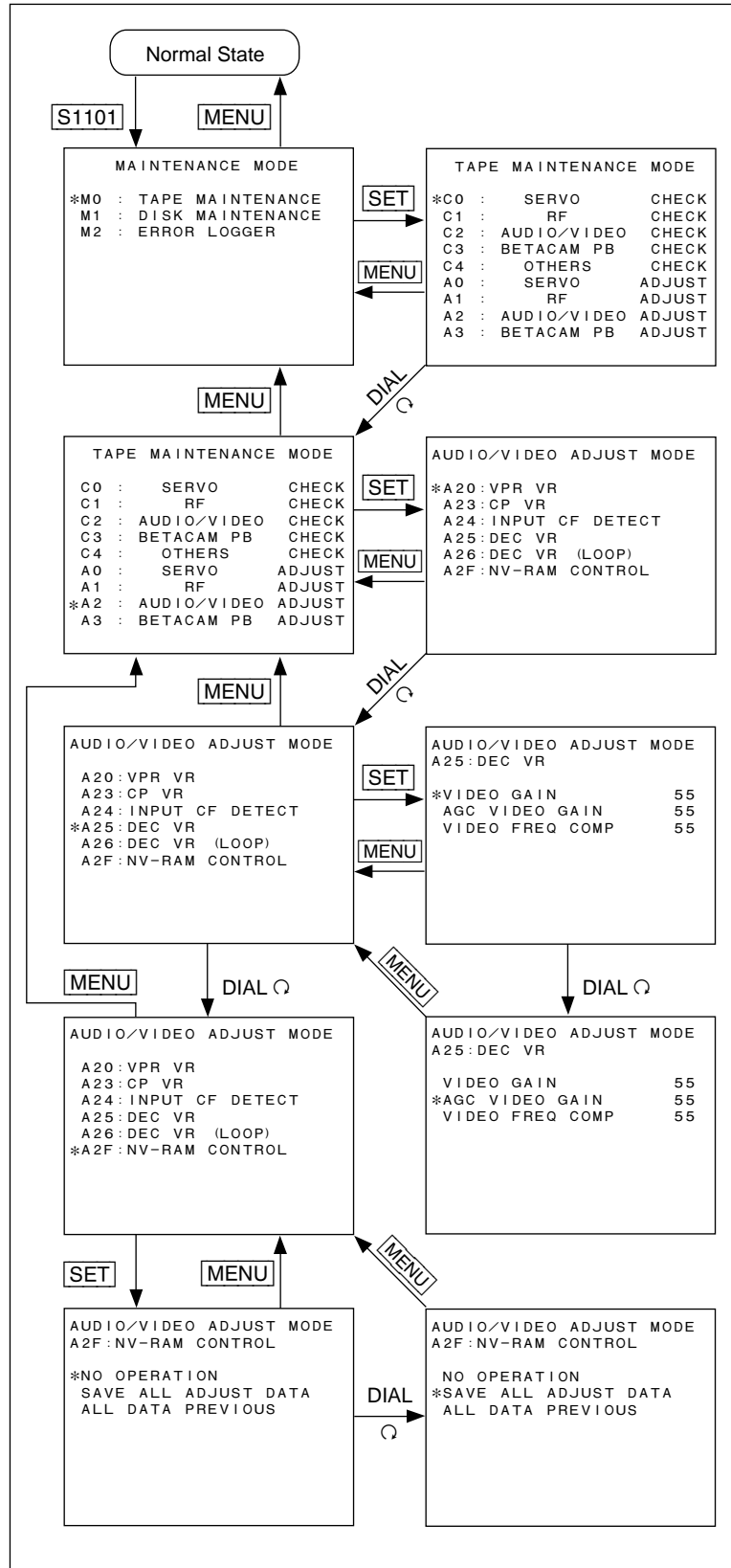
During adjustment, change the rocatonal direction of the search dial according to the change of waveform or value that is displayed on the measuring equipment.

## 5. Changing the Setting

Turn the search dial while pressing the JOG button to display the desired setting.

## 6. Saving the Data

- (1) Turn the search dial and set the \* mark to A2F : NV-RAM CONTROL.
- (2) Press the SET button.
- (3) Turn the search dial and set the \* mark to “SAVE ALL ADJUST DATA” .
- (4) Press the SET button.



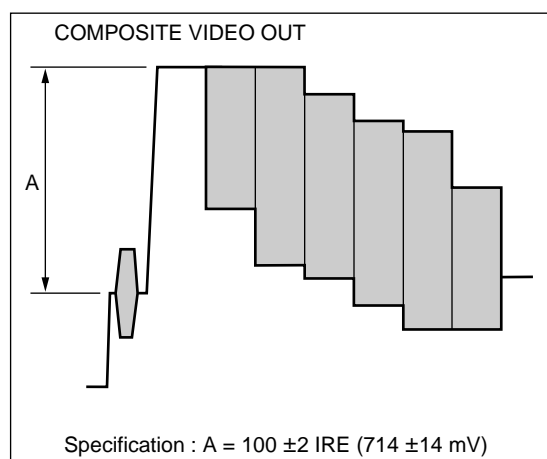
## Check and Adjustment

### Note

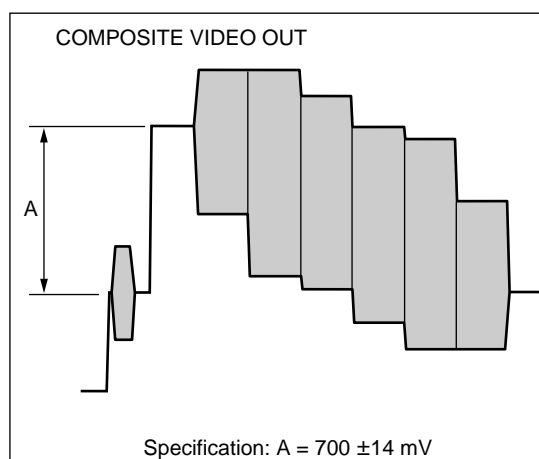
Wait more than 30 minutes after turning on the power, then perform the check and adjustment.

### 1. Check and Adjustment of Analog Composite Input Level

- (1) Set the output signal of a signal generator to color-bar signal.  
 For BKDW-505: 75% color-bar signal  
 For BKDW-506: 100% color-bar signal
- (2) Check using a waveform monitor that the level between the pedestal and peak white satisfies the specifications. When the specification is satisfied, go to "2. Frequency Response Check".  
 If the specification is not satisfied, perform steps (3) to (9), then go to "2. Frequency Response Check".



**BKDW-505 (75% color-bar signal/NTSC)**



**BKDW-506 (100% color-bar signal/PAL)**

Refer to 1-34 page for the operation method of the maintenance mode when adjusting.

- (3) Press S1101 on the SS-63 board so as to enter the maintenance mode.
- (4) Select "AGC VIDEO GAIN" of A25: DEC VR.
- (5) Turn the search dial slowly while pressing the JOG button on the lower control panel until the level between the pedestal and peak white satisfies the specifications.

### Note

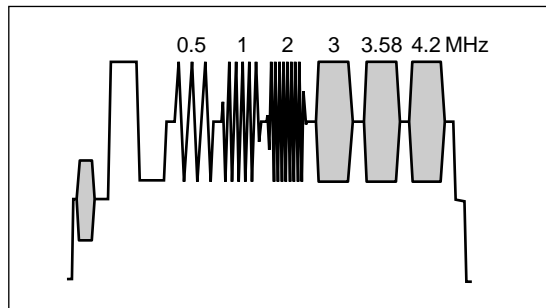
The data value displayed on the video monitor screen changes.

Turn the search dial while monitoring the change in a level.

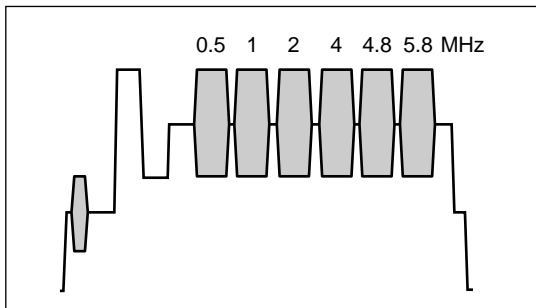
- (6) After completing the adjustment, press the MENU button once so as to exit A25:DEC VR.
- (7) Select A2F:NV-RAM CONTROL and save the adjusted data in NV-RAM (execute "SAVE ALL ADJUST DATA").
- (8) Check that the message "Save Complete" is displayed on the video monitor screen.
- (9) Press the MENU button four times so as to exit the maintenance mode.

## 2. Frequency Response Check

- (1) Set the output signal of the signal generator to the multi-burst signal.
- (2) Check using the waveform monitor that the level of each frequency component is uniform.  
If the level is not uniform, perform steps (3) to (8).



**BKDW-505 (Multi-burst signal/NTSC)**



**BKDW-506 (Multi-burst signal/PAL)**

### Note

Refer to 1-34 page for the operation method of the maintenance mode when adjusting.

- (3) Press S1101 on the SS-63 board so as to enter the maintenance mode.
- (4) Select "VIDEO FREQ COMP" of A25: DEC VR.
- (5) Turn the search dial slowly while pressing the JOG button on the lower control panel until the level of each frequency component is uniform.

### Notes

The data value displayed on the video monitor screen changes.

Turn the search dial while monitoring the change in a level.

- (6) After completing the adjustment, press the MENU button once so as to exit A25: DEC VR.
- (7) Select A2F:NV-RAM CONTROL and save the adjusted data in NV-RAM (execute "SAVE ALL ADJUST DATA").
- (8) Check that the message "Save Complete" is displayed on the video monitor screen.
- (9) Press the MENU button on the lower control panel four times so as to exit the maintenance mode.



## 1-17. Installation of BKNW-103

By installing the SDTI Input Kit BKNW-103 in the unit, SDTI INPUT signal supplied from the external equipment is recorded to the hard disk drives at high-speed. BKNW-103 can be installed in the DNW-A100/A100P only.

### Component

• SDTI input board (CP-300 board)	1 pc
• Flat cable (30-pin)	1 pc
• Power harness	1 pc
• Screw (PSW 3 × 6)	1 pc
• Screws (BVTT 3 × 6)	2 pcs

### 1-17-1. Procedure

#### Importance

Check the ROM version (SY1, SY2 and SSX) of the unit by C40: ROM VERSION of the maintenance mode before starting the installation.

SY1: ROM version 2.00 or higher

SY2: ROM version 2.00 or higher

SSX: ROM version 2.00 or higher

If the ROM version is lower than the value described above, the version-up must be required. For the version-up, contact your local Sony Sales Office/Service Center.

#### Notes

Turn off the power before starting the installation.  
A rear shield lid is used in the DNW-A100P only.

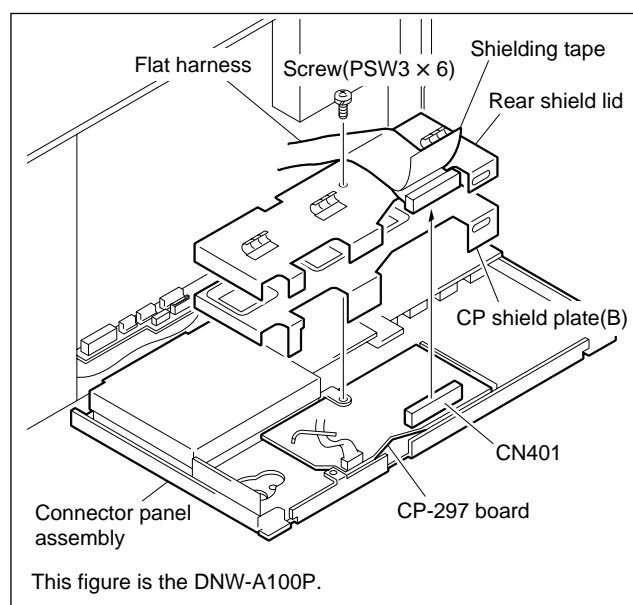
- (1) Remove the connector panel assembly. (Refer to “2-3-3. Connector Panel Assembly Removal/Installation”.)
- (2) Peel off the shielding tape from the connector panel.
- (3) Unscrew the screw (PSW 3 × 6) fixing the CP shield plate (B) and rear shield lid.

- (4) Disconnect the flat harness (60-pin) from the connector (CN401) on the CP-297 board, and remove the CP shield plate (B) and rear shield lid simultaneously.

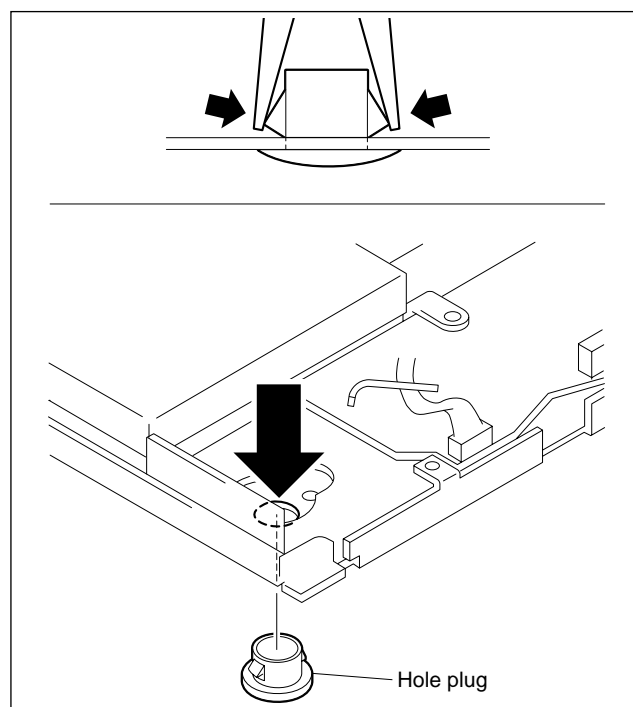
#### Note

For DNW-A100: The flat harness (60-pin) is pasted on the CP shield plate (B).

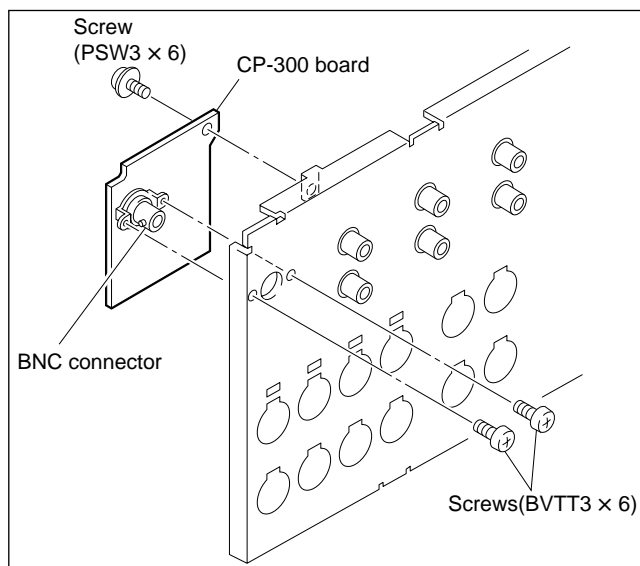
For DNW-A100P: The flat harness (60-pin) is pasted on rear shield lid.



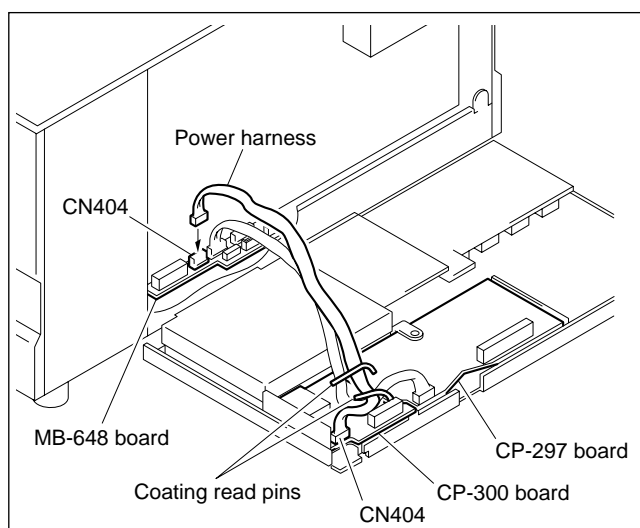
- (5) Pinch the claws of the hole plug using a long-nose pliers as shown in the figure, then remove the plug holder by pushing it from the inside of the connector panel.



- (6) Insert the BNC connector on the CP-300 board into the hole of the connector panel, then loosely attach the CP-300 board with the supplied screw (PSW 3 × 6).
- (7) Loosely screw the left side of the BNC connector to the connector panel with the supplied screw (BVTT 3 × 6) .
- (8) Screw the right side of the BNC connector with the supplied screw (BVTT 3 × 6) firmly.
- (9) Fully tighten the screws that are loosely screwed in steps (6) and (7).



- (10) Connect the supplied power harness between CN404 on the CP-300 board and CN404 on the MB-648 board.
- (11) Loosen the coating lead pin on the CP-297 board, and loosen the harness.
- (12) Fix the power harness that is connected in step (10) and the harness that is loosened in step (11) using the coating lead pins on the CP-297 board and CP-300 board.

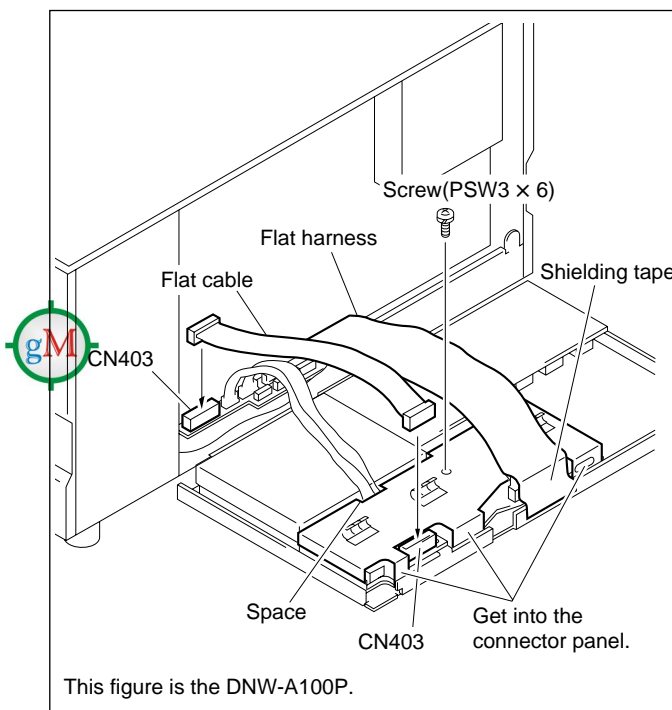


- (13) Place the CP shield plate (B) and rear shield lid so that the claws of the shield plate (B) place the inside of the connector panel, and connect the flat harness (60-pin).

#### Note

Arrange the power harness in a space of the CP shield plate (B) so as not to catch the harness.

- (14) Attach the CP shield plate (B) and rear shield lid by the screw (PSW 3 × 6) that is unscrewed in step (3).
- (15) Stick the edge of the shielding tape covering the flat harness (60-pin) that is peeled off in step (2) on the connector panel.
- (16) Connect the supplied flat cable (30-pin) between CN403 on the CP-300 board and CN403 on the MB-648 board .



- (17) Reinstall the connector panel assembly as not to catch the harness. (Refer to “2-3-3. Connector Panel Assembly Removal/Installation”.)
- (18) Perform “1-17-2. Check after Installing”.

## 1-17-2. Check after Installing

---

### Equipment

BNC cable

Pre-recorded tape or Alignment tape\*

\*: SR5-1 (For 525/60 system)

SR5-1P (For 625/50 system)

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### Check

- (1) Connect the BNC cable between the SDTI INPUT on the connector panel and the SDTI OUTPUT (1 or 2) .
- (2) Set the OUT REF switch on the sub control panel to REF.
- (3) Turn on the power.

**Note**

Check that the EXT switch on the lower control panel illuminates.

- (4) Insert the pre-recorded tape or alignment tape, and play back.
- (5) Select the SDTI by the VIDEO INPUT SELECT switch on the upper control panel.
- (6) Check that the SDTI indicator illuminates.

**Note**

If the SDTI indicator does not illuminate or blinks, check that the harnesses or cables are connected accurately.

- (7) Eject the tape.
- (8) Reset the OUT REF switch on the sub control panel to its previous state.
- (9) Disconnect the BNC cable.

## 1-18. Installation of BKNW-104

By installing the analog component input board BKNW-104 in the unit, an analog component signal is converted to a digital signal then recorded.

### Notes

If the BKDW-505/506 is already installed, the BKNW-104 can not be installed in the unit.  
When installing the BKNW-104, remove the BKDW-505/506.

### Component

- Analog component input board (AD-105 board) 1 pc

### 1-18-1. Procedure

#### Notes

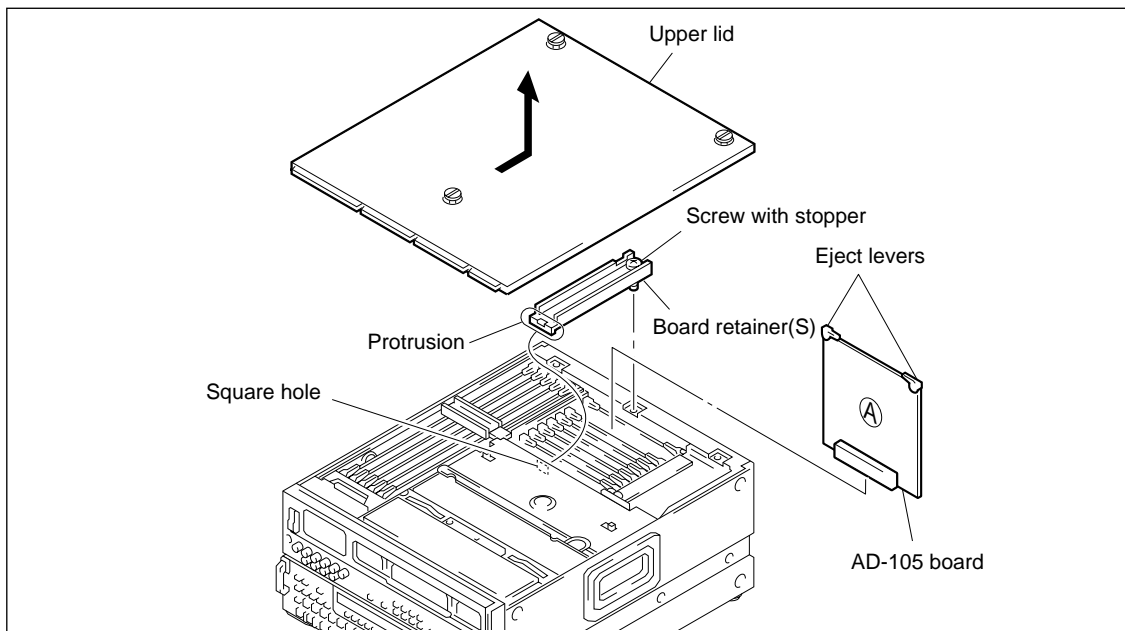
Turn off the power before starting the installation.  
Check that there is not anything wrong with COMPONENT VIDEO output picture of this unit.  
If something is wrong with it, this unit needs repair or adjustment.

- (1) Remove the upper lid. (Refer to Section 2-3-1.)
- (2) Loose one screw fully, then remove the board retainer (S).
- (3) If the BKDW-505/506 is already installed, remove the BKDW-505/506 (DEC-65 board).  
(Refer to “2-13. Pulling out/Insertion of Plug-in Board” for the removal.)
- (4) Install the AD-105 board in the second slot from the rear placing the A-side towards the front.)

#### Note

After inserting the AD-105 board, press the two eject levers from above simultaneously and connect the board to the connector on the mother board securely.

- (5) Perform “1-18-2. Adjustment after Installing”.
- (6) Turn off the power, and wait for thirty seconds.
- (7) Insert the protrusion of board retainer (S) in the square hole of chassis. Then fix the board by tightening the screw.
- (8) Reattach the upper lid.



## 1-18-2. Adjustment after Installing

Perform the adjustment as shown below after installing the AD-105 board.

### Items of Adjustment

No.	Item	Adjustment point	Notes
1	Component video output level check		
	Y	——	VIDEO OUTPUT COMPONENT Y
	R-Y	——	VIDEO OUTPUT COMPONENT R-Y
	B-Y	——	VIDEO OUTPUT COMPONENT B-Y
2	Component video Betacam output level check (In 525/60 system)		
	Y	——	VIDEO OUTPUT COMPONENT Y
	R-Y	——	VIDEO OUTPUT COMPONENT R-Y
	B-Y	——	VIDEO OUTPUT COMPONENT B-Y
3	Component video output phase check	——	VIDEO OUTPUT COMPONENT
4	Component video input level adjustment		
	Y	A22: AD VR(LOOP): Y INPUT LEVEL	VIDEO OUTPUT COMPONENT Y
	R-Y	A22: AD VR(LOOP): R-Y INPUT LEVEL	VIDEO OUTPUT COMPONENT R-Y
	B-Y	A22: AD VR(LOOP): B-Y INPUT LEVEL	VIDEO OUTPUT COMPONENT B-Y
	Data save	A2F: NV-RAM CONTROL	
5	Component video input phase adjustment		
	Y	A22: AD VR(LOOP): Y INPUT PHASE	VIDEO OUTPUT COMPONENT Y
	R-Y	A22: AD VR(LOOP): Y/R-Y INPUT DELAY	VIDEO OUTPUT COMPONENT Y/R-Y
	B-Y	A22: AD VR(LOOP): Y/B-Y INPUT DELAY	VIDEO OUTPUT COMPONENT Y/B-Y
	Data save	A2F: NV-RAM CONTROL	
6	Component video Betacam input level adjustment (In 525/60 system)		
	Y	A22: AD VR(LOOP): B-CAM Y IN LEVEL	VIDEO OUTPUT COMPONENT Y
	R-Y	A22: AD VR(LOOP): B-CAM R-Y IN LEVEL	VIDEO OUTPUT COMPONENT R-Y
	B-Y	A22: AD VR(LOOP): B-CAM B-Y IN LEVEL	VIDEO OUTPUT COMPONENT B-Y
	Data save	A2F: NV-RAM CONTROL	
7	Component video input frequency response adjustment		
	Y	A22: AD VR(LOOP): Y FREQ COMP	SDI OUTPUT
	R-Y	A22: AD VR(LOOP): R-Y FREQ COMP	SDI OUTPUT
	B-Y	A22: AD VR(LOOP): B-Y FREQ COMP	SDI OUTPUT
	Data save	A2F: NV-RAM CONTROL	
8	Component video Betacam level check and adjustment (In 625/50 system)		

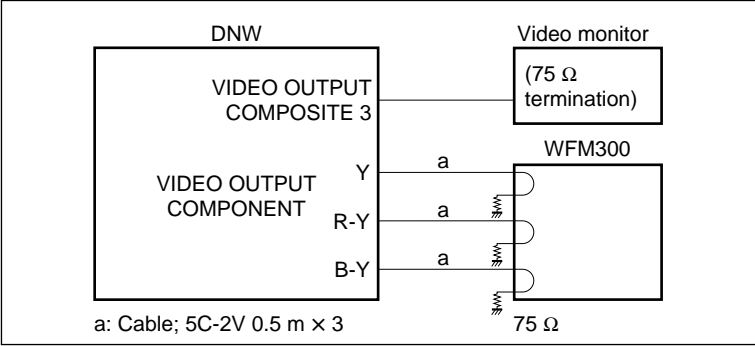
Equipment

Analog component waveform monitor (TEKTRONIX WFM300 or equivalent)  
Serial component waveform monitor (TEKTRONIX WFM601 or equivalent)  
Video monitor  
75 Ω terminators (3 pcs)

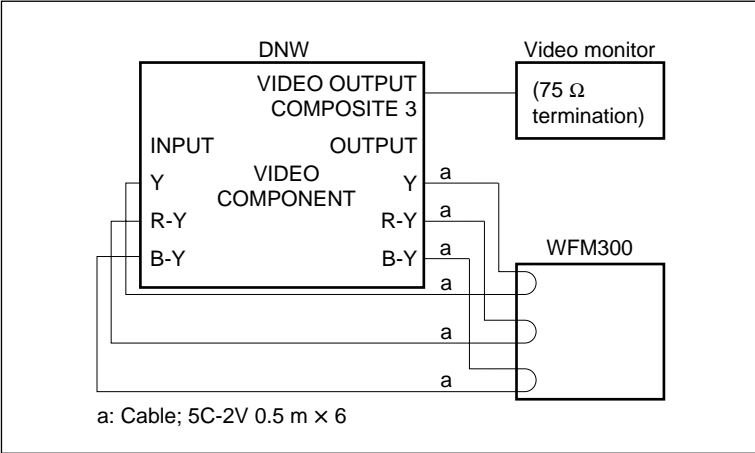
Connection

Connect the equipment described above as shown below depending on the items of adjustment.

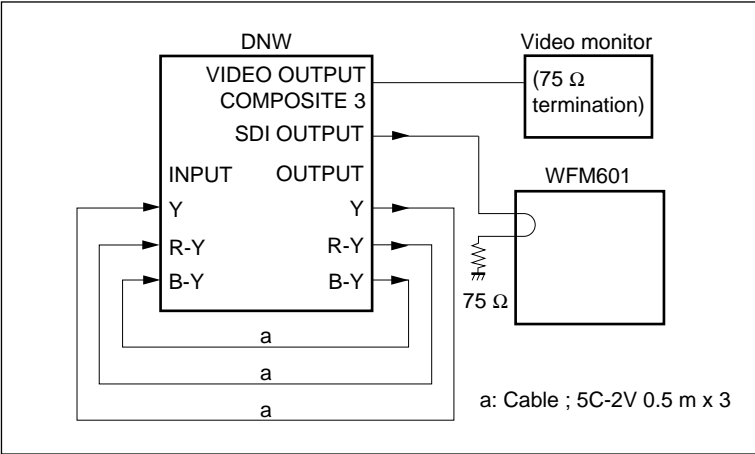
Connection 1



Connection 2

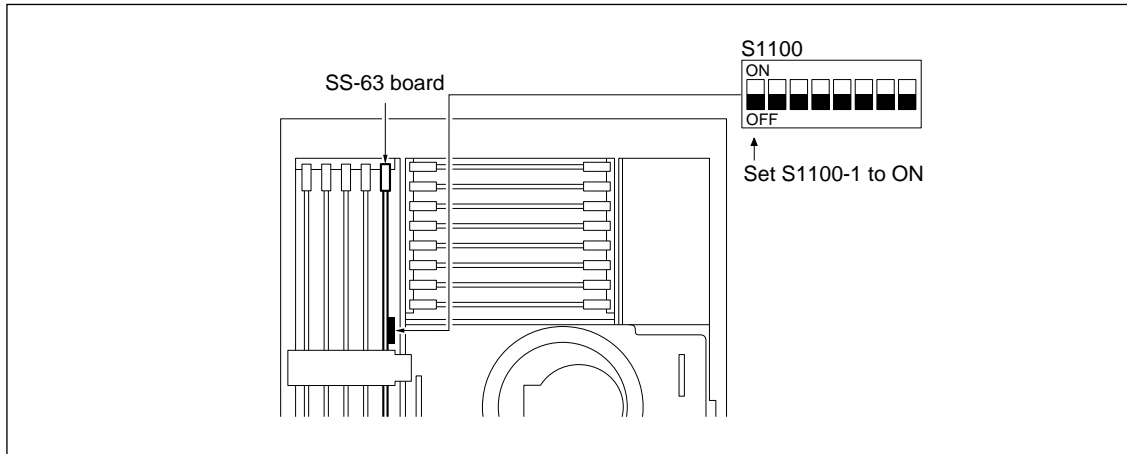


Connection 3

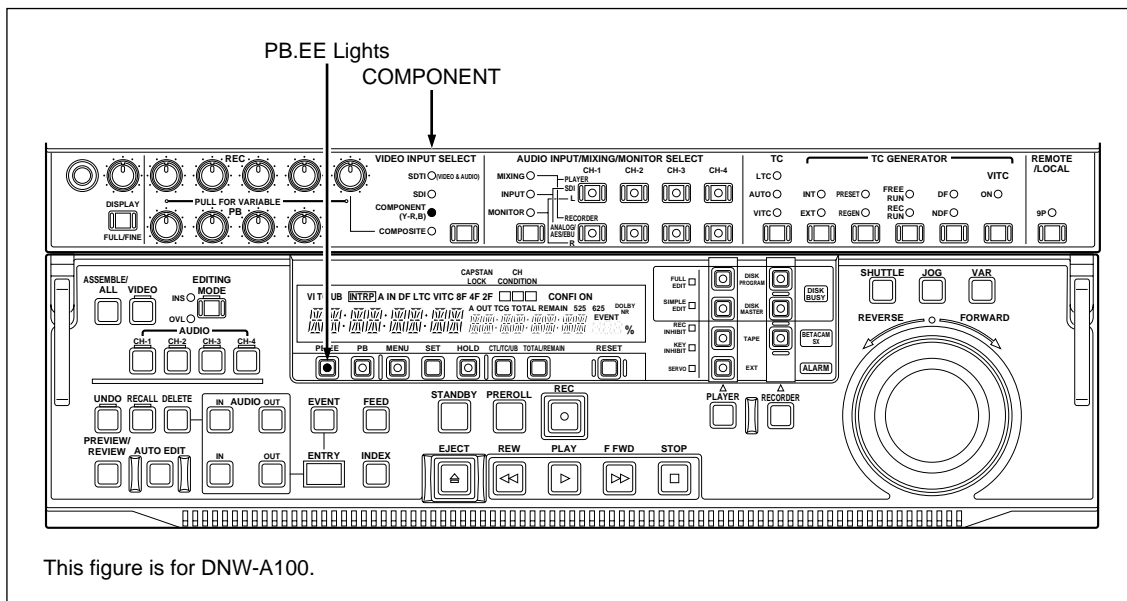


## Setting of Unit Side

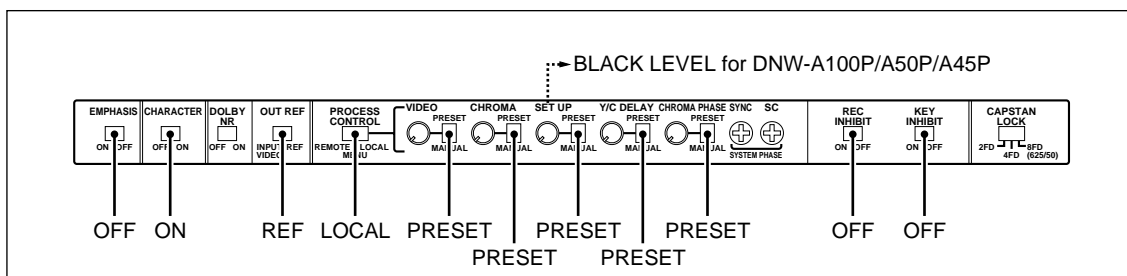
1. Turn on the power.
2. Set S1100-1 on the SS-63 board to ON (CLOSE) to treat the extended menu.



3. Set each switch on the control panels as shown below.



## Upper/Lower Control Panels



## Sub Control Panel

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## Operation Method of Maintenance Mode

### 1. Entering the Maintenance Mode

Press S1101 on the SS-63 board.

### 2. Shifting to the Next Menu

- (1) Press the JOG button once to enter the JOG mode
- (2) Turn the search dial and set the \* mark to a desired menu (mode).
- (3) Press the SET button.

### 3. Exiting from the Current Menu (Mode)

Press the MENU button.

**Note**

Press the MENU button several times to exit the maintenance mode.

### 4. Changing the Data Value

- (1) Turn the search dial and set the \* mark to the item to adjust.
- (2) Turn the search dial while pressing the JOG button.  
REVERSE direction: decrease the data value  
FORWARD direction: increase the data value

**Note**

During adjustment, change the rotational direction of the search dial according to the change of wave form or value that is displayed on the measuring equipment.

### 5. Changing the Setting

Turn the search dial while pressing the JOG button to display the desired setting.

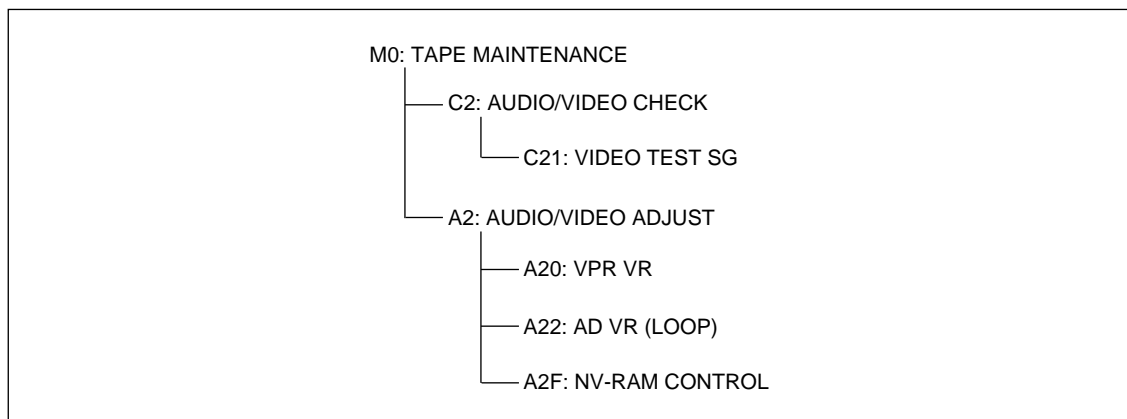
### 6. Saving the Data

- (1) Turn the search dial and set the \* mark to A2F: NV-RAM CONTROL.
- (2) Press the SET button.
- (3) Turn the search dial and set the \* mark to "SAVE ALL ADJUST DATA"
- (4) Press the SET button.



**Note**

The sub mode and menu of the maintenance mode that is used when installing the AD-105 board (BKNW-104) is as shown below.

**Check and Adjustment****Preparation**

Check which this unit operates in 525/60 system or 625/50 system.

- When this unit operates in 525/60 system
  - Set the SUB-ITEMs of the setup extended menus ITEM-709 and ITEM-713 as shown below.

ITEM	SUB-ITEM	Setting	Previous setting (fill-up)
709: CAV LEVEL FORMAT	0. INPUT CAV LEVEL	B-CAM	_____
	1. OUTPUT CAV LEVEL	D-1	_____
713: VIDEO SETUP REFERENCE LEVEL	0. MASTER LEVEL	0.0 %	_____
	1. INPUT LEVEL	MSTER	_____
	2. VBLK REMOVE CNT	REMOV	_____
	3. BETACAM PB LEVEL	MSTER	_____
	4. OUTPUT LEVEL	MSTER	_____

- Perform 1 through 7 of Check and Adjustment in 525/60 system.

- When this unit operates in 625/50 system
 

Perform 1, 3, 4, 5 and 7 of Check and Adjustment in 625/50 system. Then switch to 525/60 system, and perform 8.

**Note**

The check and adjustment of the component video Betacam level can be performed when this unit operates in 525/60 system.

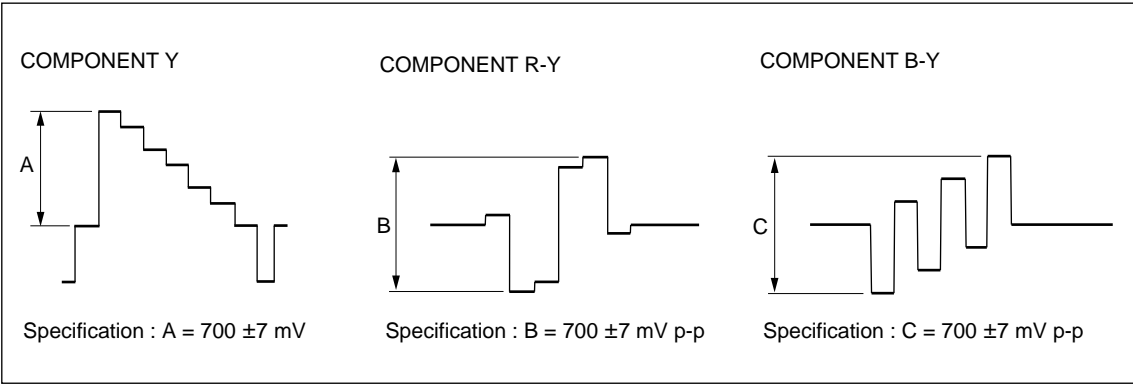
**Note**

Wait more than 30 minutes after turning on the power, then perform the check and adjustment.

1. Component Video Output Level Check

Refer to 1-44 page for the operation method of the maintenance mode when checking.

- (1) Connect as connection 1.
- (2) Press S1101 on the SS-63 board so as to enter the maintenance mode.
- (3) Select C21: VIDEO TEST SG of C2: AUDIO/VIDEO CHECK of the maintenance mode.
- (4) Set TEST SG output to “100% Color Bars”.
- (5) Check using a waveform monitor that the levels of Y, R-Y and B-Y satisfy the specifications.  
When the specifications are satisfied, perform “2. Component Video Betacam Output Level Check”.
- If the specifications are not satisfied, perform “2. Component Video Output Level Adjustment” of Section 6-9-2. (Electrical adjustment after replacement of the VPR-17 board.)



## 2. Component Video Betacam Output Level Check (In 525/60 system)

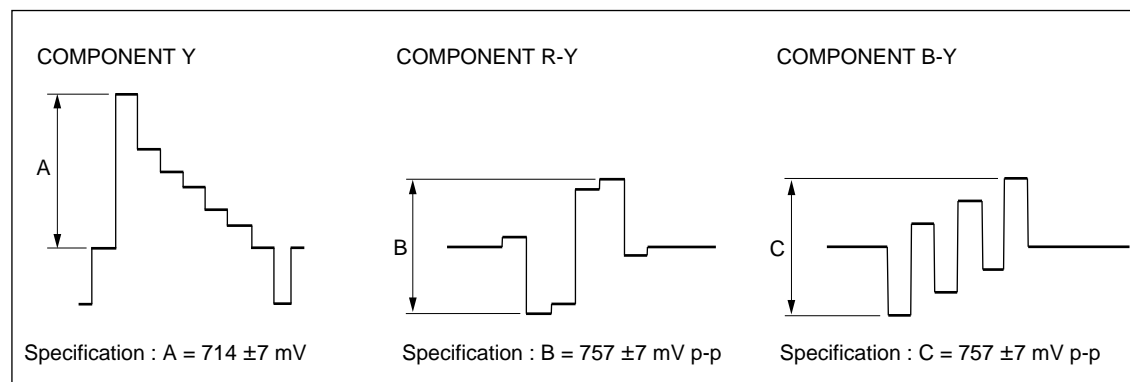
### Note

This check can be performed only in 525/60 system.

When the check is performed in 625/50 system, go to “3. Component Video Output Phase Check”.

Refer to 1-44 page for the operation method of the maintenance mode when checking.

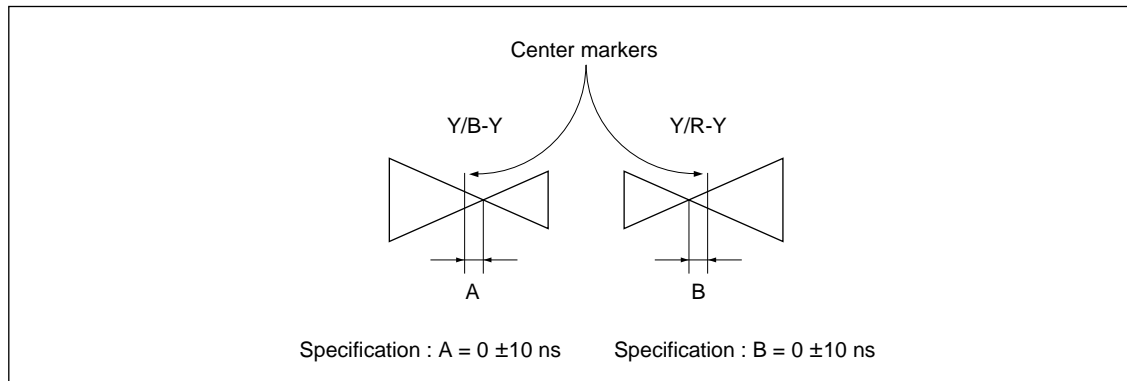
- (1) Connect as connection 1.
- (2) Select SUB-ITEM 1: OUT PUT CAV LEVEL of ITEM-709 CAV LEVEL FORMAT, and set to “B-CAM”.
- (3) Select C21: VIDEO TEST SG of C2: AUDIO/VIDEO CHECK of the maintenance mode.
- (4) Set TEST SG output to “75% Color Bars”.
- (5) Check using a waveform monitor that the levels of Y, R-Y and B-Y satisfy the specifications.  
When the specifications are satisfied, perform “3. Component Video Output Phase Check”.  
If the specifications are not satisfied, perform “3. Component Video Output (BETACAM) Level Adjustment” of Section 6-9-2. (Electrical adjustment after replacement of the VPR-17 board.)



### 3. Component Video Output Phase Check

Refer to 1-44 page for the operation method of the maintenance mode when checking.

- (1) Connect as connection 1.
- (2) Select C21: VIDEO TEST SG of C2: AUDIO/VIDEO CHECK of the maintenance mode.
- (3) Set TEST SG output to BOWTIE.
- (4) Set the waveform monitor to BOWTIE mode.
- (5) Measure the cross points of Y and B-Y, Y and R-Y, then check using a waveform monitor that the deviation between the dip points and the center markers satisfy the specifications.
- (6) Press the MENU button two times so as to exit C2: AUDIO/VIDEO CHECK.

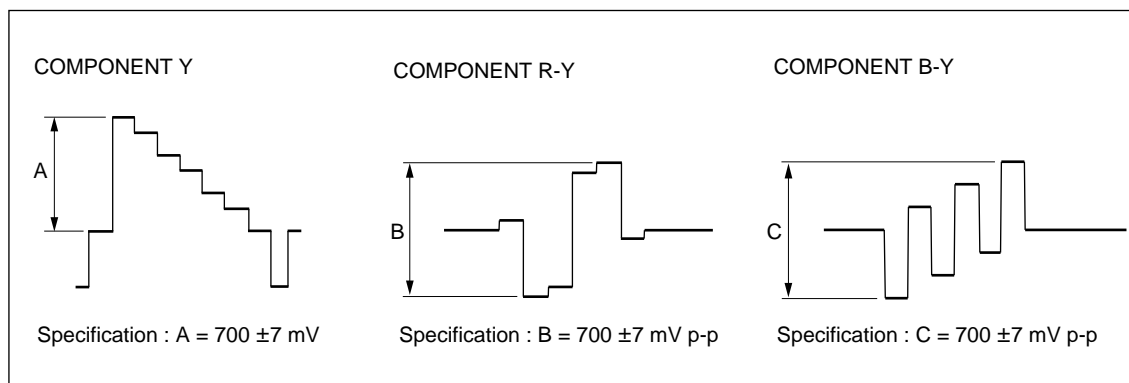


- (7) When this unit operates in 525/60 system, reset the ITEM-709 and ITEM-713 to their previous state.
- (8) Reset the setting of S1100-1 on the SS-63 board to its previous state.

#### 4. Component Video Input Level Adjustment

Refer to 1-44 page for the operation method of the maintenance mode when adjusting.

- (1) Connect as connection 2.
- (2) Select A22: AD VR (LOOP) of A2: AUDIO/VIDEO ADJUST of the maintenance mode.
- (3) Select "Y INPUT LEVEL".
- (4) Adjust "Y INPUT LEVEL" that the level of Y satisfies the specification.
- (5) Select "R-Y INPUT LEVEL".
- (6) Adjust "R-Y INPUT LEVEL" that the level of R-Y satisfies the specification.
- (7) Select "B-Y INPUT LEVEL".
- (8) Adjust "B-Y INPUT LEVEL" that the level of B-Y satisfies the specification.

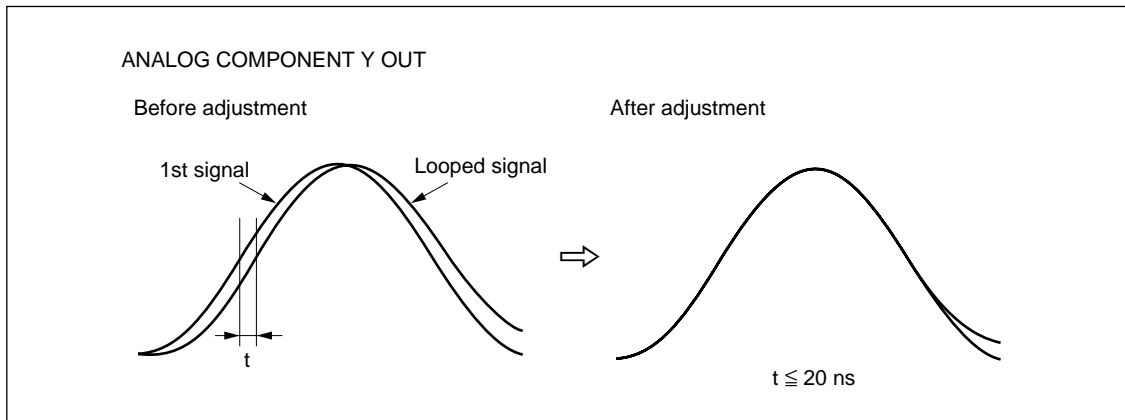


- (9) After completing the adjustments, press the MENU button once so as to exit A22: AD VR (LOOP).
- (10) Select A2F: NV-RAM CONTROL and save the adjusted data in NV-RAM (execute "SAVE ALL ADJUST DATA").
- (11) Check that the message "Save Complete" is displayed on the video monitor screen.
- (12) Press the MENU button once so as to exit A2F: NV-RAM CONTROL.

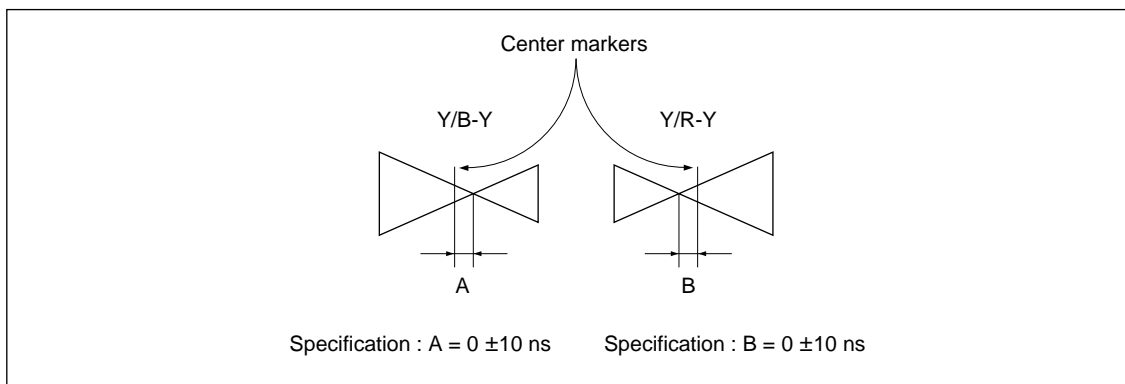
## 5. Component Video Input Phase Adjustment

Refer to 1-44 page for the operation method of the maintenance mode when adjusting.

- (1) Connect as connection 3 or 2.
- (2) Select “Y INPUT PHASE” of A22: AD VR (LOOP) of the maintenance mode.
- (3) Magnify the horizontal axis on the screen of the waveform monitor, then display 2T pulse.
- (4) Adjust that 1st signal and signal after looping overlap.



- (5) Set the waveform monitor to BOWTIE mode.
- (6) Select “Y/B-Y INPUT DELAY”.
- (7) Measure the cross point of Y and B-Y, then adjust “Y/B-Y INPUT DELAY” that the deviation between the dip point and the center marker satisfies the specification.
- (8) Select “Y/R-Y INPUT DELAY”.
- (9) Measure the cross point of Y and R-Y, then adjust “Y/R-Y INPUT DELAY” that the deviation between the dip point and the center marker satisfies the specification.



- (10) After completing the adjustment, press the MENU button once so as to exit A22: AD VR (LOOP).
- (11) Select A2F: NV-RAM CONTROL and save the adjusted data in NV-RAM (execute “SAVE ALL ADJUST DATA”).
- (12) Check that the message “Save Complete” is displayed on the video monitor screen.
- (13) Press the MENU button once so as to exit A2F: NV-RAM CONTROL.

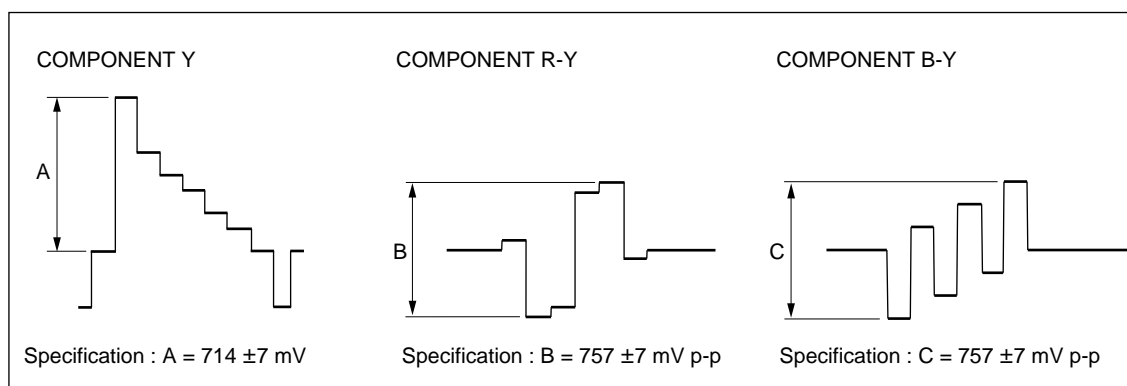
## 6. Component Video Betacam Input Level Adjustment (In 525/60 system)

### Note

This adjustment can be performed only in 525/60 system, When the adjustments are performed in 625/50 system, go to “7. Component Video Input Frequency Response Adjustment”.

Refer to 1-44 page for the operation method of the maintenance mode when adjusting.

- (1) Connect as connection 3 or 2.
- (2) Select “B-CAM Y IN LEVEL” of A22: AD VR (LOOP) of the maintenance mode.
- (3) Adjust “B-CAM Y IN LEVEL” that the level of Y satisfies the specification.
- (4) Select “B-CAM R-Y IN LEVEL”.
- (5) Adjust “B-CAM R-Y IN LEVEL” that the level of R-Y satisfies the specification.
- (6) Select “B-CAM B-Y IN LEVEL”.
- (7) Adjust “B-CAM B-Y IN LEVEL” that the level of B-Y satisfies the specification.

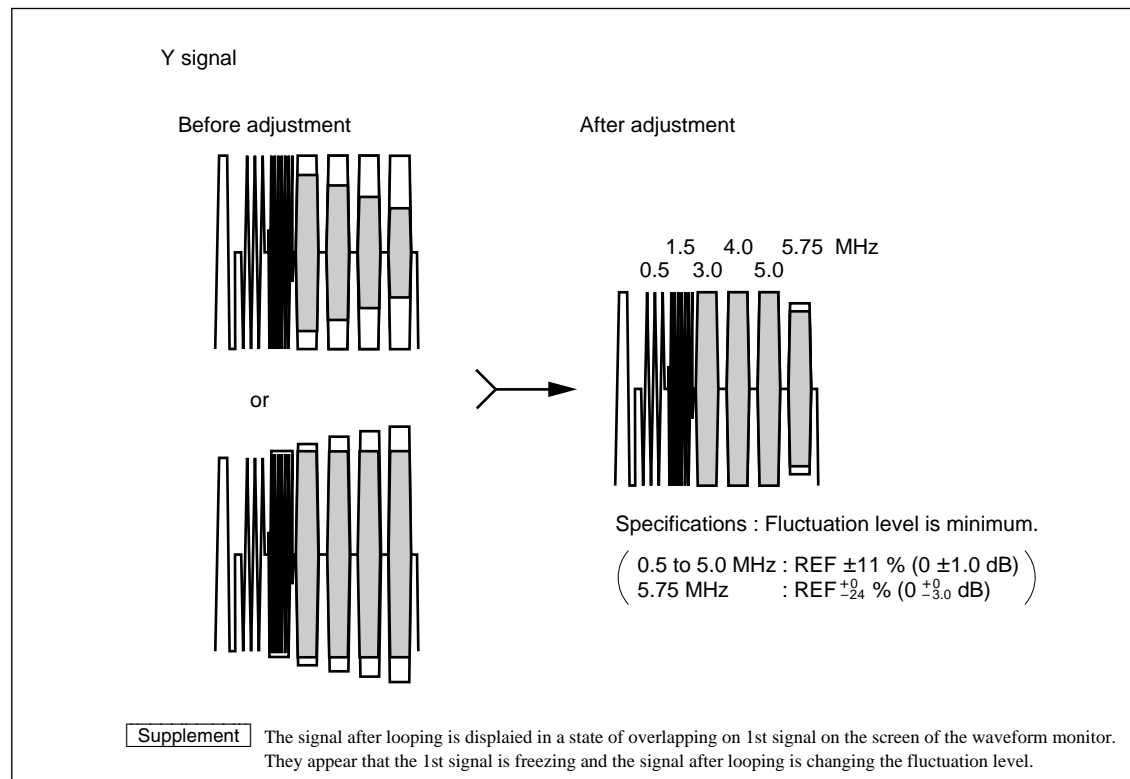


- (8) After completing the adjustments, press the MENU button once so as to exit A22: AD VR (LOOP).
- (9) Select A2F: NV-RAM CONTROL and save the adjusted data in NV-RAM (execute “SAVE ALL ADJUSTMENT DATA” ).
- (10) Check that the message “Save Complete” is displayed on the monitor screen.
- (11) Press the MENU button once so as to exit A2F: NV-RAM CONTROL.

## 7. Component Video Input Frequency Response Adjustment

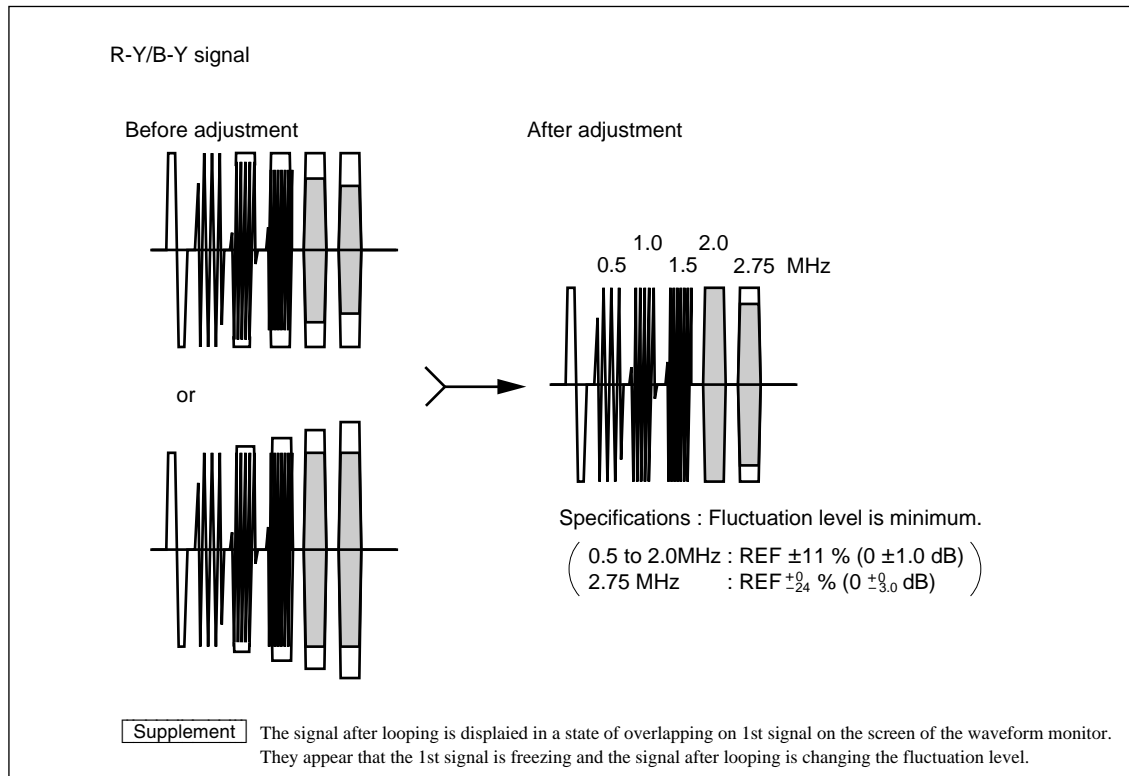
Refer to 1-44 page for the operation method of the maintenance mode when adjusting.

- (1) Connect as connection 3.
- (2) Select "Y FREQ COMP" of A22: AD VR (LOOP) of the maintenance mode.
- (3) Adjust "Y FREQ COMP" that the fluctuation level is minimum.
- (4) Regard 1st signal of each frequency as 100 % (REF), then check that the level of signal after looping satisfies the specifications.





- (5) Select “R-Y FREQ COMP”.
- (6) Adjust “R-Y FREQ COMP” that the fluctuation level is minimum.
- (7) Regard 1st signal of each frequency as 100 % (REF), then check that the level of signal after looping satisfies the specifications.
- (8) Select “B-Y FREQ COMP”.
- (9) Adjust “B-Y FREQ COMP” that the fluctuation level is minimum.
- (10) Regard 1st signal of each frequency as 100 % (REF), then check that the level of signal after looping satisfies the specifications.



- (11) After completing the adjustment, push the MENU button once so as to exit A22: AD VR (LOOP).
- (12) Select A2F: NV-RAM CONTROL and save the adjusted data in NV-RAM (execute “SAVE ALL ADJUST DATA”).
- (13) Check that the message “Save Complete” is displayed on the video monitor screen.
- (14) • For 525/60 system  
 Push the MENU button four times so as to exit the maintenance mode.  
 • For 625/50 system  
 Perform “8. Component Video Betacam Level Check and Adjustment”.

## 8. Component Video Betacam Level Input Check and Adjustment (In 625/50 system)

When this unit is adjusted in 625/50 system, perform this adjustment after switching this unit to 525/60 system.

When this unit is adjusted in 525/60 system, this adjustment is not required.

Refer to 1-44 page for the operation method of the maintenance mode when adjusting.

### Importance

If the 525/625 line systems are switched, the signal that had recorded on the HDD is erased. It is impossible to bring the data back.

- (1) Set the switch S1100-1 on the SS-63 board to ON.
- (2) Switch to the 525/60 system by the setup menu ITEM-013: 525/625 SYSTEM SELECT.  
(Refer to Section 7-2-2 of the operation manual.)
- (3) Check that the COMPONENT indicator of the VIDEO INPUT SELECT on the upper control panel illuminates. And check that the PB.EE button on the lower control panel illuminates.
- (4) Set the SUB-ITEMs of the setup extended menus ITEM-709 and ITEM-713 as shown below.

ITEM	SUB-ITEM	Setting	Previous setting (fill-up)
709: CAV LEVEL FORMAT	0. INPUT CAV LEVEL	B-CAM	
	1. OUTPUT CAV LEVEL	B-CAM	
713: VIDEO SETUP REFERENCE LEVEL	0. MASTER LEVEL	0.0 %	
	1. INPUT LEVEL	MSTER	
	2. VBLK REMOVE CNT	REMOV	
	3. BETACAM PB LEVEL	MSTER	
	4. OUTPUT LEVEL	MSTER	

- (5) Perform “2. Component Video Betacam Output Level Check”.
- (6) Perform “6. Component Video Betacam Input Level Adjustment”.
- (7) Press the MENU button several times so as to exit the maintenance mode.
- (8) Return the SUB-ITEMs of the setup extended menus ITEM-709 and ITEM-713 to their previous settings.
- (9) Switch to the 625/50 system by the setup menu ITEM-013.  
(Refer to Section 7-2-2 of the operation manual.)
- (10) Reset the setting of S1100-1 on the SS-63 board to its previous state.

## 1-19. Installation of BKNW-105

By installing the AES/EBU I/F kit BKNW-105 in the unit, it becomes possible to input and output a digital audio signal of AES/EBU format.

### Notes

When installing the BKNW-105, remove the APR-13 and CP-278 boards.

If the BKNW-105 is installed, an analog audio signal can not be input and output. (AUDIO OUTPUT/INPUT CH-1/2/3/4 connectors are not available.)

### Component

• AES/EBU connector board (CP-308 board)	1 pc
• AES/EBU interface board (DIF-44 board)	1 pc
• Harness 8-pin (AES/EBU IN)	1 pc
• Harness 6-pin (AES/EBU OUT)	1 pc
• Ornamental plate	1 pc
• Screws (BVTT 3 × 6)	7 pcs

### 1-19-1. Procedure

#### Importance

Check the ROM version (SY1, SY2 and SSX) of the unit by C40: ROM VERSION of the maintenance mode before starting the installation.

SY1: ROM version 2.00 or higher

SY2: ROM version 2.00 or higher

SSX: ROM version 2.00 or higher

If the ROM version is lower than the value described above, the version-up must be required. For the version - up, consult with Sony's sales/service organization.

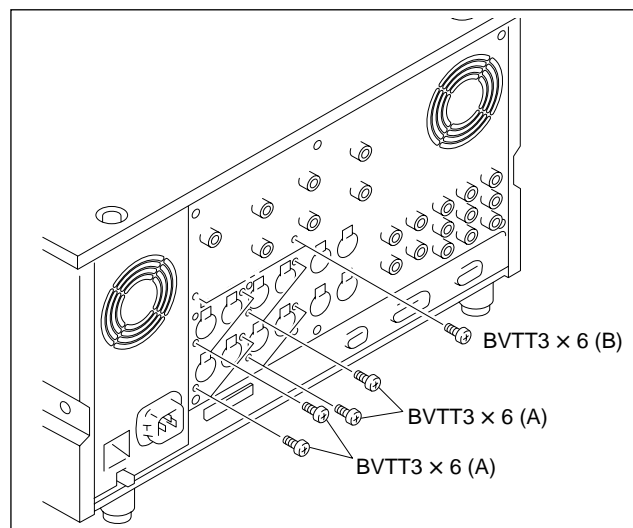
### Notes

Turn off the power before starting the installation.

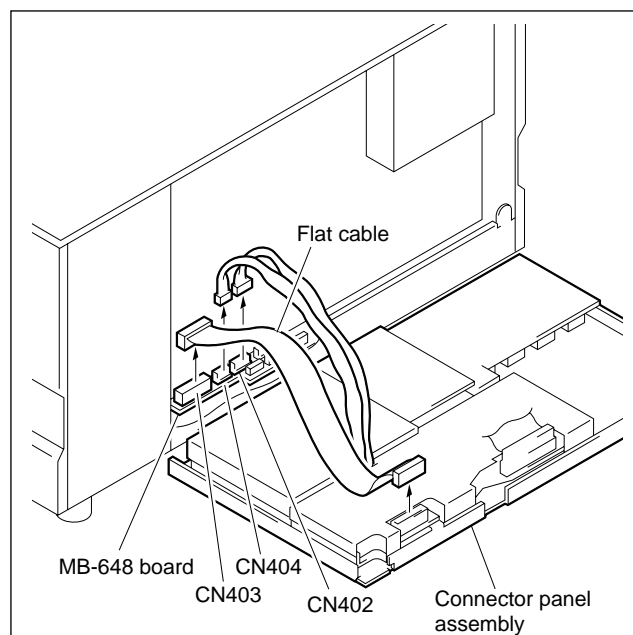
Never reuse the removed screws (BVTT 3 × 6).

### Installation of CP-308 board

- (1) Unscrew the eight screws (BVTT 3 × 6) shown as A in the figure.
- (2) Unscrew the two screws (BVTT 3 × 6) shown as B in the figure.



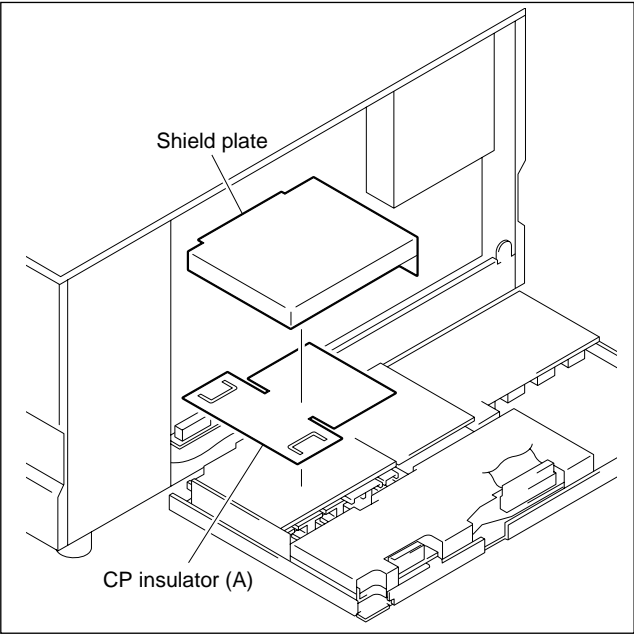
- (3) Remove the connector panel assembly. (Refer to “2-3-3. Connector Panel Assembly Removal/Installation”.)
- (4) Disconnect the harness from CN402 on the MB-648 board.
- (5) When the BKNW-103 (CP-300 board) is installed:
  - Remove the flat cable that is connecting between CN403 on the CP-300 board and CN403 on the MB-648 board.
  - Disconnect the harness from CN404 on the MB-648 board.



(6) Remove the shield plate and CP insulator (A).

**Note**

Keep the CP insulator (A) with the CP-278 board. It needs when installing the CP-278 board again.

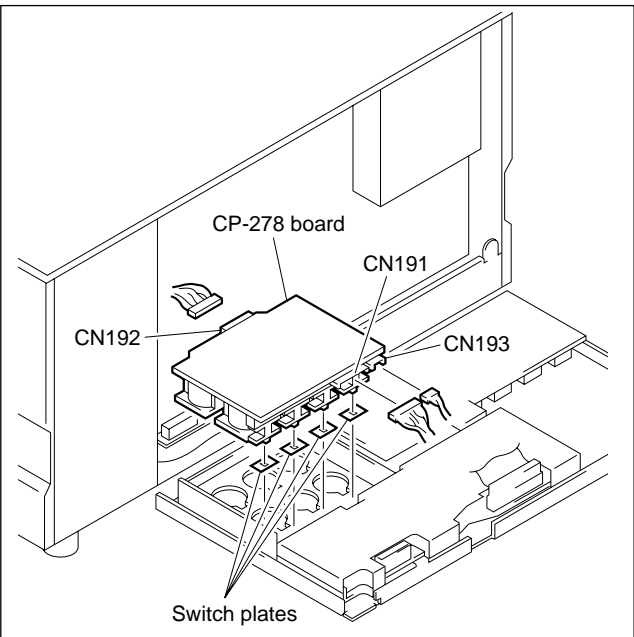


(7) Disconnect the harnesses from the connectors (CN191, 192 and 193) on the CP-278 board, and remove the CP-278 board.

(8) Remove the four switch plates.

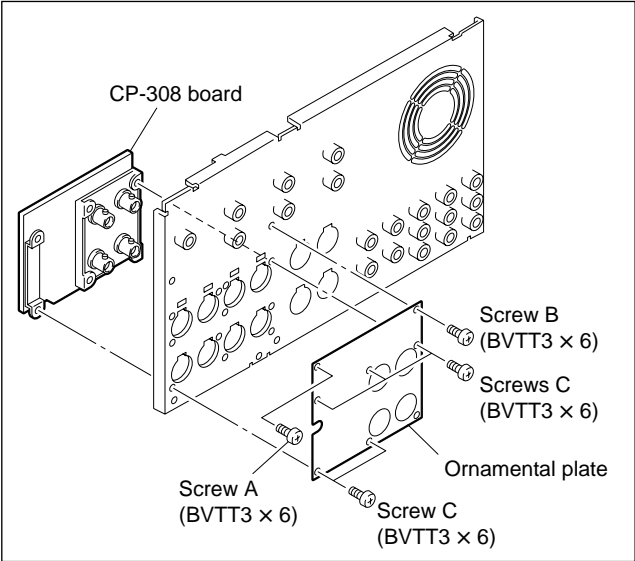
**Note**

Keep the switch plates with the CP-278 board that is removed in step (7).



(9) Attach the ornamental plate by supplied screws A and B (BVTT 3 × 6) .  
(Screw in order of A,B shown in the figure.)

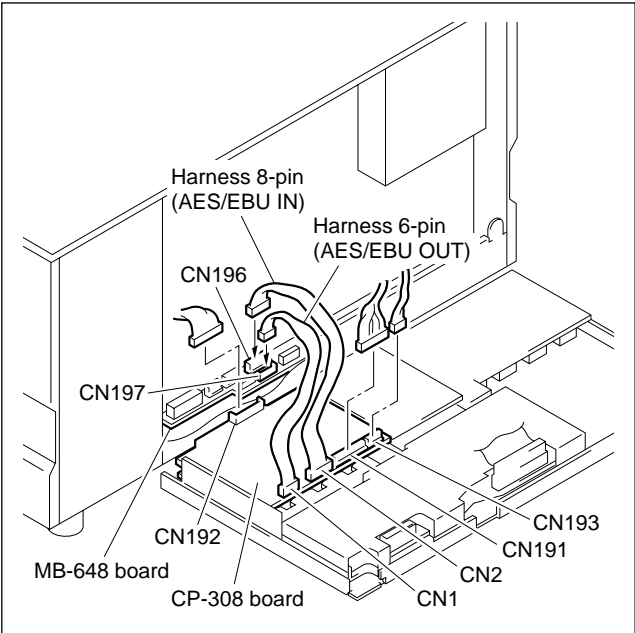
(10)Install the CP-308 board by supplied five screws (BVTT 3 × 6) (shown as C in the figure) from the connector panel side while holding the CP-308 board.



(11)Connect the three harnesses that are disconnected from the CP-297 board in step (7) to the connectors (CN191, 192 and 193) on the CP-308 board.

(12)Connect the two supplied harnesses between the CP-308 board and MB-648 board.

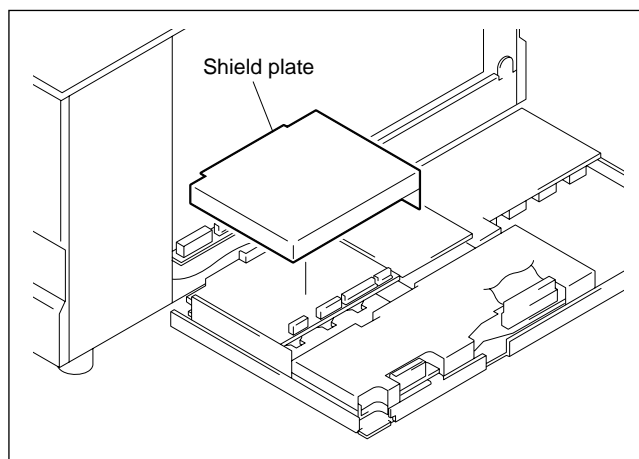
CP-308 board	MB-648 board	Harness
CN1	CN197	6-pin (AES/EBU OUT)
CN2	CN196	8-pin (AES/EBU IN)



(13) Fit the shield plate.

**Note**

Gather the harness in a space of the CP shield plate as not to catch the harness.



(14) Connect the harness that is disconnected in step (4) to CN402 on the MB-648 board.

(15) When the BKNW-103 (CP-300 board) is installed:

- Connect the flat cable that is removed in step (5).
- Connect the harness that is disconnected in step (5) to CN404 on the MB-648 board.

(16) Reattach the connector panel assembly.

## Installation of DIF-44 board

(17) Remove the upper lid. (Refer to Section 2-3-1.)

(18) Loosen one screw fully, then remove the board retainer (S).

(19) Remove the APR-13 board from the third slot from the front.

(Refer to “2-13. Pulling out /Insertion of Plug-in Board” for the removal.)

(20) Install the DIF-44 board in the third slot from the front placing the A-side towards the front.

**Note**

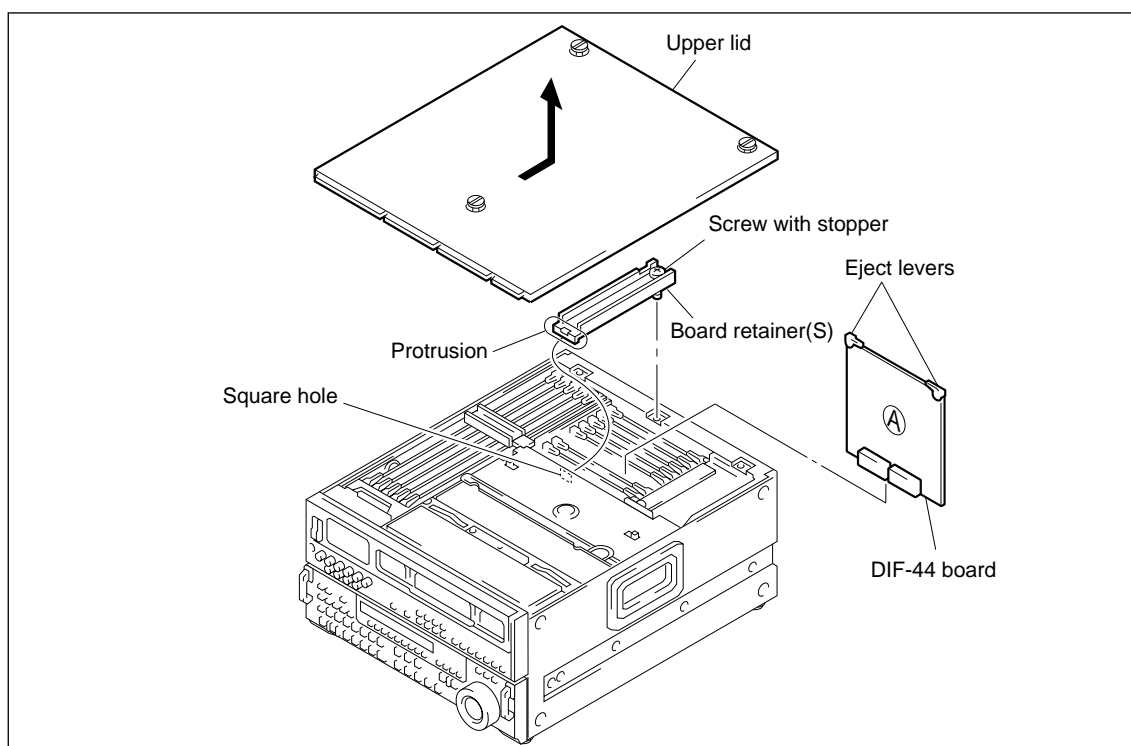
After inserting the DIF-44 board, press the two eject levers from above simultaneously and connect the board to the connectors on the mother board securely.

(21) Perform “1-19-2. Check after Installing”.

(22) Turn off the power, and wait for 30 seconds.

(23) Insert the protrusion of the board retainer (S) in the square hole of chassis. Then fix the board by tightening the screw.

(24) Reattach the upper lid.



Installation of DIF-44 Board

## 1-19-2. Check after Installing

### Equipment

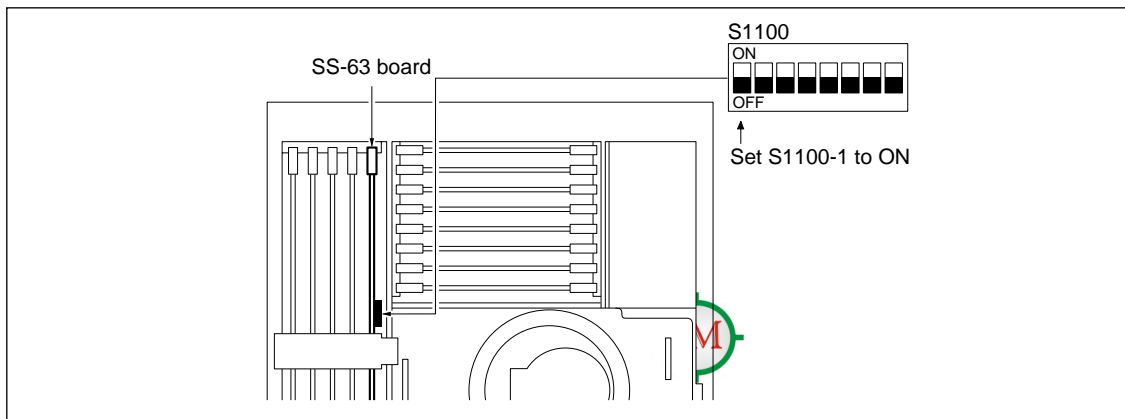
Video monitor

Headphones

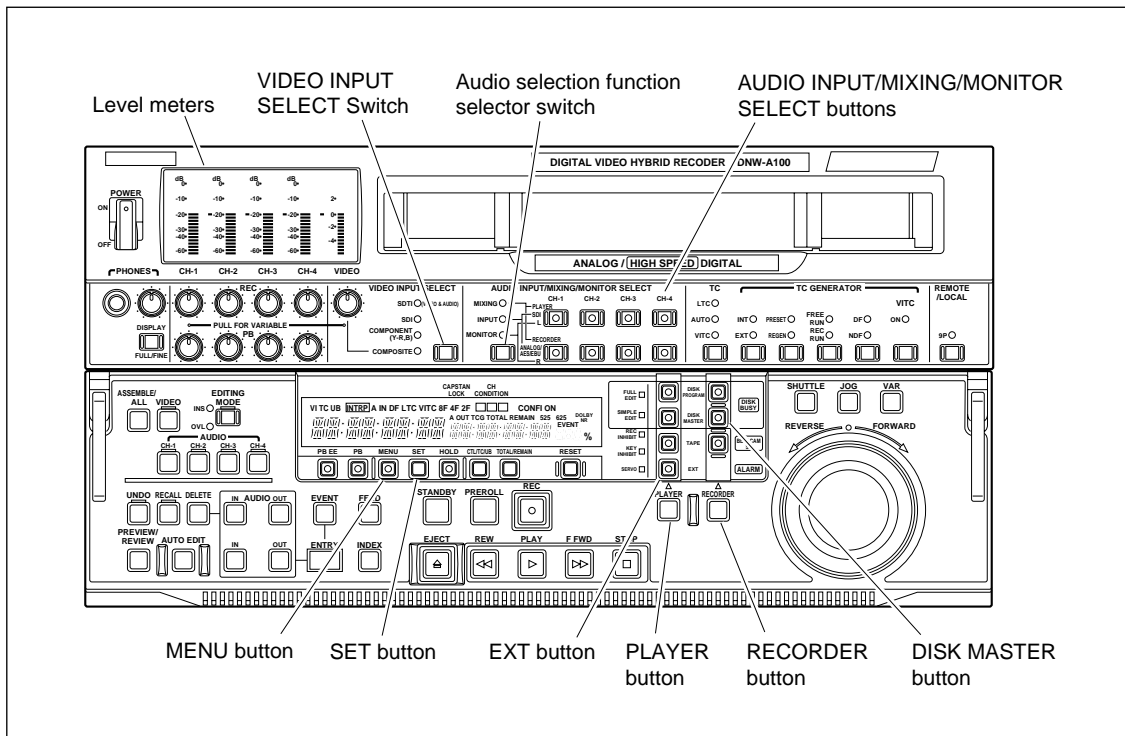
BNC cables (For the loop connection) 2 pcs

### Procedure

- (1) Connect between the VIDEO OUTPUT COMPOSITE 3 (SUPER) connector of the unit and a video monitor.
- (2) Plug the headphones.
- (3) Set S1100-1 on the SS-63 board to ON (CLOSE) to treat the extended menu.



### Check



- (1) Turn on the power.
- (2) Select EXT as a player device, and DISK MASTER as a recorder device.  
(Press the EXT button while pressing the PLAYER button. Press the DISK MASTER button while pressing the RECORDER button.)
- (3) Set the all channels (CH-1/2/3/4) of AUDIO INPUT/MIXING/MONITOR SELECT to AES/EBU.

### **Generation of internal test signal of VIDEO/AUDIO [through step (12) ]**

- (4) Press the MENU button to enter the set up menu mode.
- (5) Turn the search dial to select ITEM-710 INTERNAL VIDEO SIGNAL GENERATOR.
- (6) Turn the search dial while pressing the JOG button on the lower control panel, and set to "100% Color Bars".
- (7) Turn the search dial to select ITEM-808 INTERNAL AUDIO SIGNAL GENERATOR.
- (8) Turn the search dial while pressing the JOG button on the lower control panel, and set to "1 kHz sine" .
- (9) Press the SET button to exit the set up menu mode.
- (10) Press the VIDEO INPUT SELECT switch more than three seconds to cause the four indicators to illuminate.  
= Internal signal generator generates the video test signal.
- (11) Illuminate the INPUT indicator.
- (12) Press the CH-1 button of the AUDIO INPUT/MIXING/MONITOR SELECT (SDI line or ANALOG/AES/EBU line) more than three seconds to cause the all buttons to illuminate. =Internal signal generator generates the audio test signal (1 kHz).

### **Record the internal test signal to the hard disk drives [through step (16)]**

- (13) Press the REC button while pressing the PLAY button, and record the signal to the hard disk drives for thirty seconds.
- (14) Press the STOP button to stop the recording.
- (15) Press the VIDEO INPUT SELECT switch to stop the video test signal.
- (16) Press one of the AUDIO INPUT/MIXING/MONITOR SELECT buttons to stop the audio test signal.

#### **Note**

The audio test signal can be stopped when only the INPUT indicator illuminates.

### **Preparation for dubbing [through step (26)]**

- (17) Select DISK MASTER as a player device.  
(Push the DISK MASTER button while pressing the PLAYER button.)
- (18) Press the MENU button to enter the set up menu mode.
- (19) Turn the search dial to select ITEM-322 AUDIO SIGNAL FLOW D-D.
- (20) Turn the search dial while pressing the JOG button on the lower control panel, and set to "ext".
- (21) Press the SET button to exit the set up menu mode.
- (22) Connect the BNC cable between CH-1/2 of AUDIO OUTPUT (AES/EBU) and CH-1/2 AUDIO INPUT (AES/EBU) of the connector panel.
- (23) Connect the BNC cable between CH-3/4 of AUDIO OUTPUT (AES/EBU) and CH-3/4 AUDIO INPUT (AES/EBU) of the connector panel.
- (24) Press the PLAYER button, and check that the INDEX button stays unlit.
- (25) Press the F FWD button. = Skips to the end of the MASTER FILE that is recorded in step (13) as a player.
- (26) Press the INDEX button to illuminate, and push the REW button. = Skips to the beginning of the MASTER FILE that is recorded in step (13) as a player.

### **Dubbing in the hard disk drives [through step (31)]**

- (27) Press the PLAY button.
- (28) Press the RECORDER button.
- (29) Press the PLAY button while pressing the REC button, and dub the MASTER FILE that is recorded in step (13) for fifteen seconds.
- (30) Press the STOP button to stop the recording.
- (31) Press the STOP button after pressing the PLAYER button to stop the PLAYER.

### **Check [through step (37) ]**

- (32) Wear the headphones.
- (33) Select the EXT as a player device. (Press the EXT button while pressing the PLAYER button.)
- (34) Press the PLAY button to playback the file that is recorded in step (29), and check that the all audio level meter (CH-1/2/3/4) read  $-20$  dB FS.
- (35) Switch to MONITOR by audio selection function selector switch.
- (36) Check that the noise is not heard while switching the CH-1/2/3/4.
- (37) Press the STOP button to stop the playback, and remove the BNC cables that were connected in steps (22) and (23).

#### **Note**

Be sure to remove the BNC cable before going to the next step.

### **Handling after check [through step (42)]**

- (38) Press the MENU button to enter the setup menu mode.
- (39) Set ITEM-710 INTERNAL VIDEO SIGNAL GENERATOR and ITEM-808 INTERNAL AUDIO SIGNAL GENERATOR to "OFF". Set ITEM-322 AUDIO SIGNAL FLOW D-D to "int".
- (40) Press the SET button to exit the setup menu mode.
- (41) Set S1100-1 on the SS-63 board to its previous state.
- (42) Delete the file that is recorded. (Refer to "Chapter 5. Editing Using the Built-in Hard Disk" of the operation manual.)



## Section 2

### Service Overview

#### 2-1. Notes on Power Supply Block

##### 2-1-1. Warning on Primary Circuit Block and Electric Shock

###### **WARNING**

The primary circuit consists of the AC-169 board with AC inlet, the circuit breaker, the POWER switch, and the power supply unit.

Be careful not to receive an electric shock when performing the maintenance and service works with the power turned on.

A primary voltage remains applied to the AC-169 board, circuit breaker, and POWER switch even if the POWER switch is turned off. For the work that requires no current conduction, therefore, turn off the POWER switch and disconnect the power cord.

##### 2-1-2. Note on Resetting the Circuit Breaker

The circuit breaker of a primary circuit is mounted on the power panel of this unit. When an overcurrent flows in the primary circuit, the breaker operates and the button protrudes.

If the breaker operates, eliminate the cause for which an overcurrent flows, then push the button.

#### 2-2. Cleaning when the Heads are Clogged

Clean using a cleaning cassette tape (specified product: BCT-5CLN) when the video heads are clogged.

For the cleaning, refer to “5-2-1. Cleaning with Cleaning Tape”.

###### **WARNING**

Clean the video heads in the prescribed procedure using a specified cleaning cassette tape. If not, the rotary heads may be abrasive or damaged.

If the head clogging is not solved using a cleaning cassette tape, use cleaning cloth.

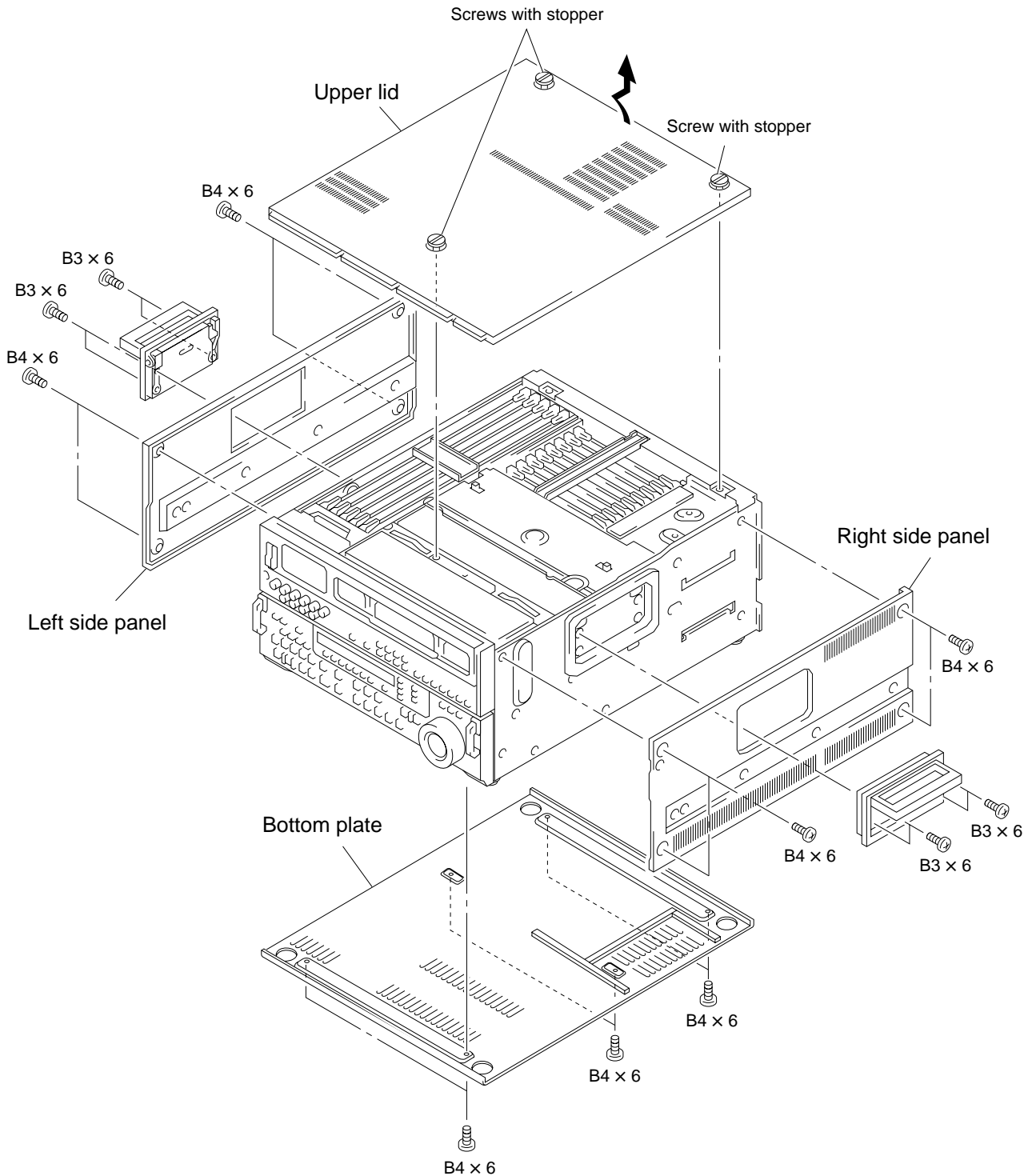
For the cleaning using a cleaning cloth, clean according to the procedure of “5-2-3. Tape Running Surface of Upper Drum and Video Heads Cleaning” after confirming the cautions and preparation in “5-2-2. General Information for Cleaning with Cleaning Cloth”.

## 2-3. Removal/Installation of Cabinet

### 2-3-1. Upper Lid, Side Panels, and Bottom Plate Removal/Installation

**Note**

Turn off the power and unplug the power cord before starting the removal/installation.



## Upper Lid

- (1) Loosen the three fixing screws.
- (2) Remove the upper lid by moving in the direction indicated by the arrow.

For installation, perform in the reverse procedures of removal.

## Side Panels

(The right and left side panels are the same in procedure.)

- (1) Remove the four screws (B3 × 6), and remove the handle.
- (2) Remove the four screws (B4 × 6), and remove the side panel.

For installation, perform in the reverse procedures of removal.

## Bottom Plate

### Notes

- With the handle attached, place the unit on its right side panel down for removal and installation. Lend your hand so that the lower handle does not hang down.
- Be careful not to shock the hard disk drive when laying the unit.

- (1) Remove the six screws (B4 × 6), and remove the bottom plate.

For installation, perform in the reverse procedures of removal.

## 2-3-2. Control Panels Removal/Installation

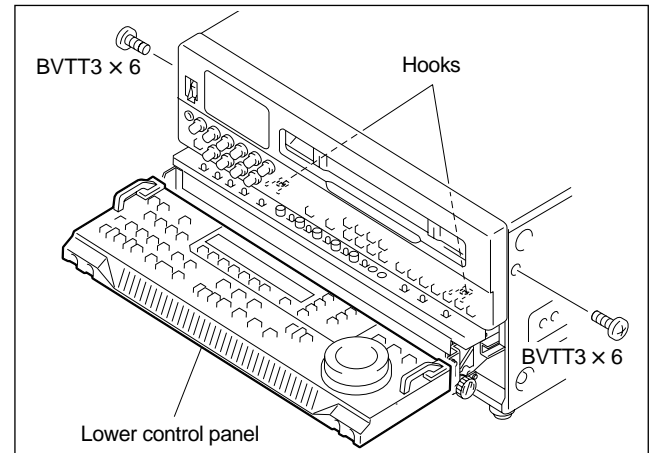
### Note

Turn off the power and unplug the power cord before starting the removal/installation.

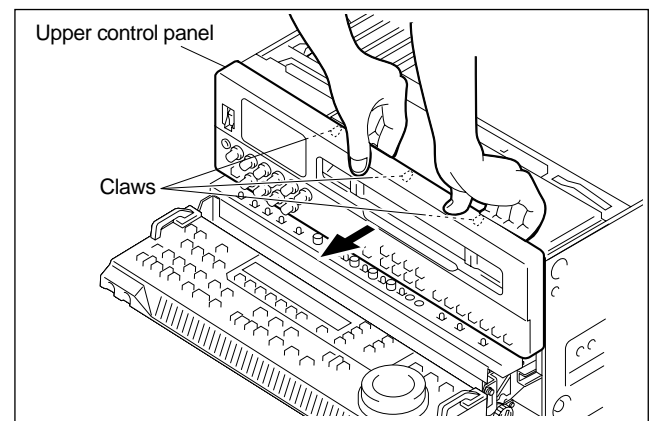
## Upper Control Panel

- (1) Remove the upper lid.  
(Refer to “2-3-1. Upper Lid, Side Panels, and Bottom Plate Removal/Installation”.)
- (2) Remove the each one screw on the left and right side.
- (3) Slightly pull the lower control panel forward, then pull it more strongly to tilt the lower control panel upward (to 90° position).

- (4) Unhook the two hooks at lower portion on the upper control panel.



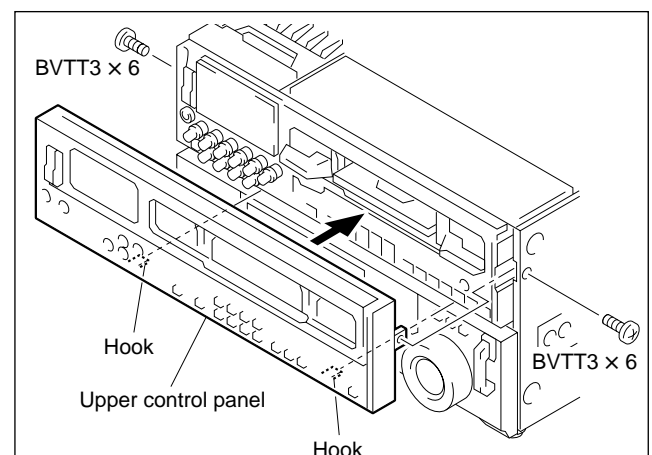
- (5) Unhook the claws at the upper control panel from the chassis, and remove in the direction of the arrow.



For installation, perform in the reverse procedures of removal.

### Note

Insert the hooks at the back of the panel into the convex portions of the chassis, then install the panel in the chassis. (Refer to the figure below.)



**Note**

Turn off the power and unplug the power cord before starting the removal/installation.

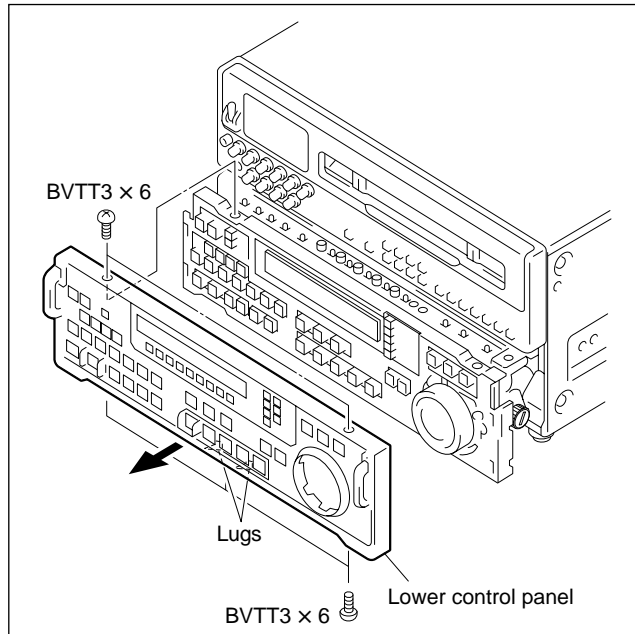
**Lower Control Panel**

- (1) Slightly pull the lower control panel forward, then pull it more strongly.
- (2) Remove the five screws on the top and bottom of the lower control panel.

**Note**

Open the lower control panel to facilitate removing the screws at the bottom of the panel.

- (3) Remove the two lugs at the back of the lower control panel.
- (4) Remove the lower control panel in the direction of the arrow.



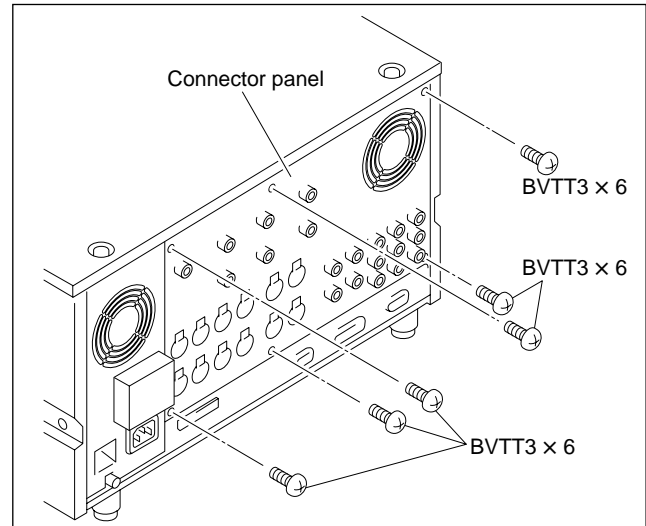
For installation, perform in the reverse procedures of removal.

**2-3-3. Connector Panel Assembly Removal/Installation**

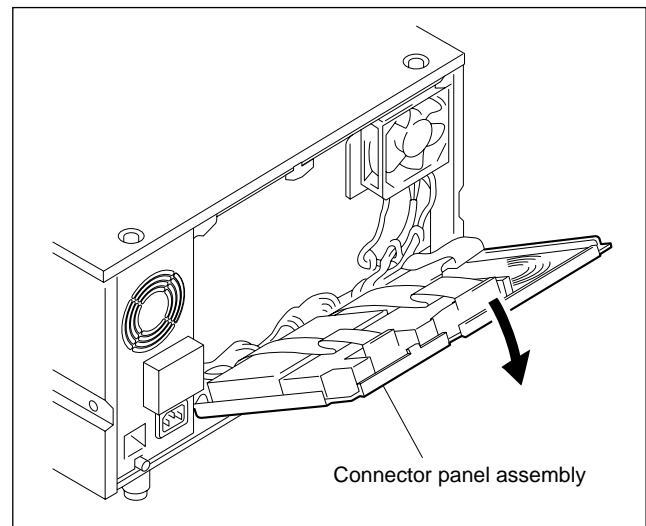
**CAUTION**

For your safety, turn off the power and unplug the power cord before starting the removal/installation.

- (1) Remove the six screws indicated ⇨ on the connector panel.



- (2) Being careful not to stretch the harnesses, remove the connector panel assembly as shown in the figure.



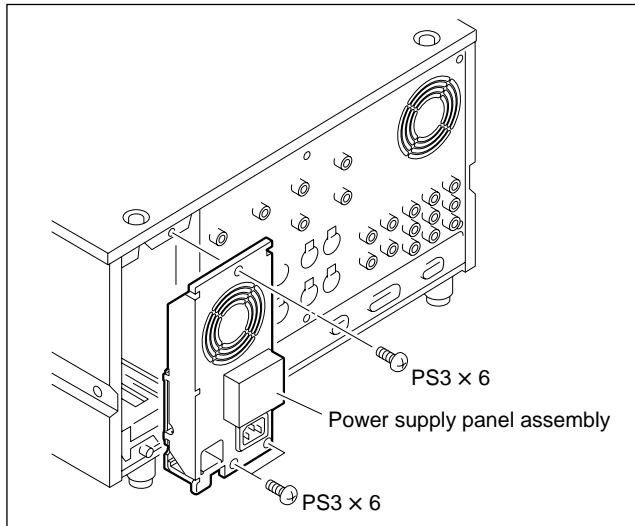
For installation, perform in the reverse procedures of removal.

## 2-3-4. Power Supply Panel Assembly Removal/Installation

### CAUTION

For your safety, turn off the power and unplug the power cord before starting the removal/installation.

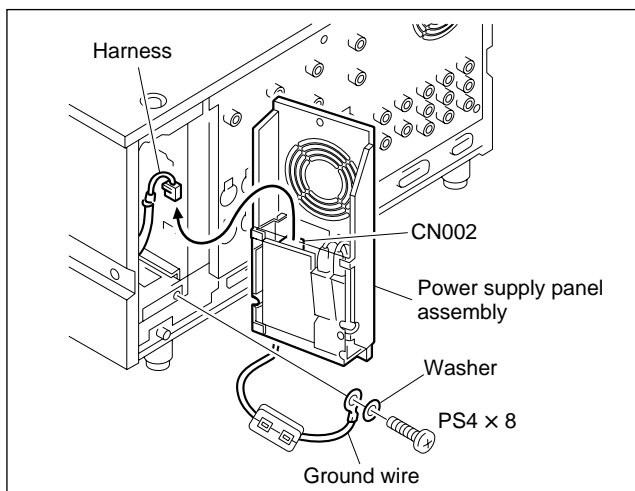
- (1) Remove the three screws, then pull out the power supply panel assembly.



- (2) Disconnect the harness from the connector (CN002) on AC-169 board.
- (3) Remove the one screw fixing the ground wire to the chassis, then remove the power supply panel assembly.

### Note

Be sure to remove the washer.



For installation, perform in the reverse procedures of removal.

### Note

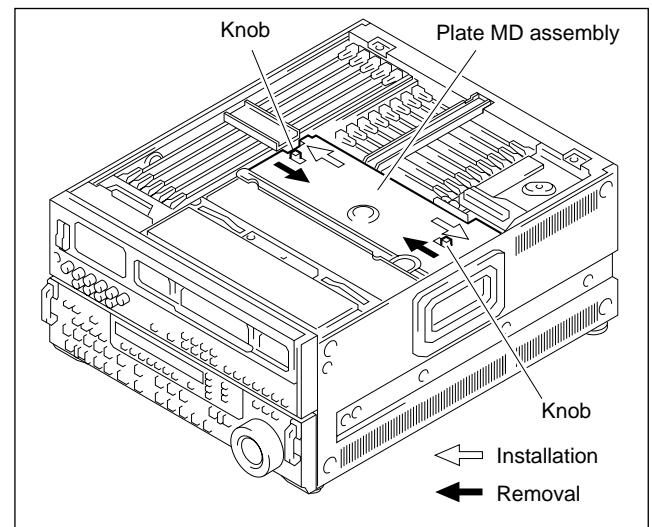
To fix the ground wire, put the washer between the terminal of ground wire and screw.

## 2-4. Plate MD Assembly Removal/Installation

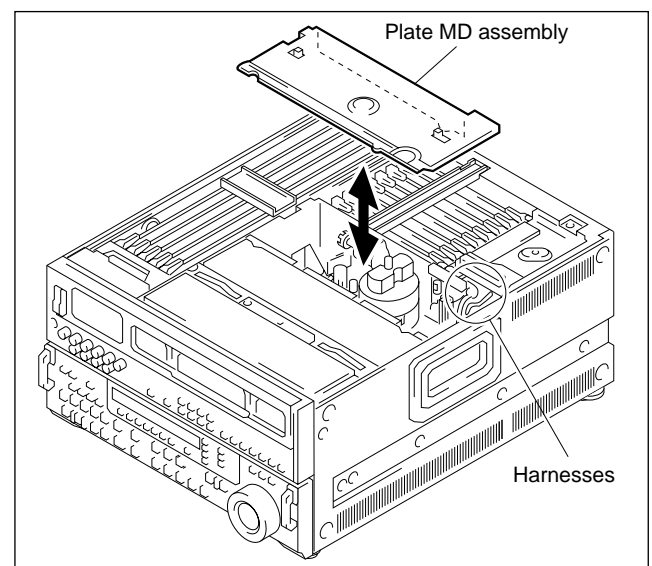
### Note

Turn off the power and unplug the power cord before starting the removal/installation.

- (1) Remove the upper lid.  
(Refer to “2-3-1. Upper Lid, Side Panels, and Bottom Plate Removal/Installation”.)
- (2) Slide the knobs on the plate MD assembly each in the inside. (Move the knobs to the outside. The plate MD assembly is fixed.)



- (3) Remove the plate MD assembly.



For installation, perform in the reverse procedures of removal.

### Note

Be careful not to pinch the harnesses under the plate MD assembly in the installation.

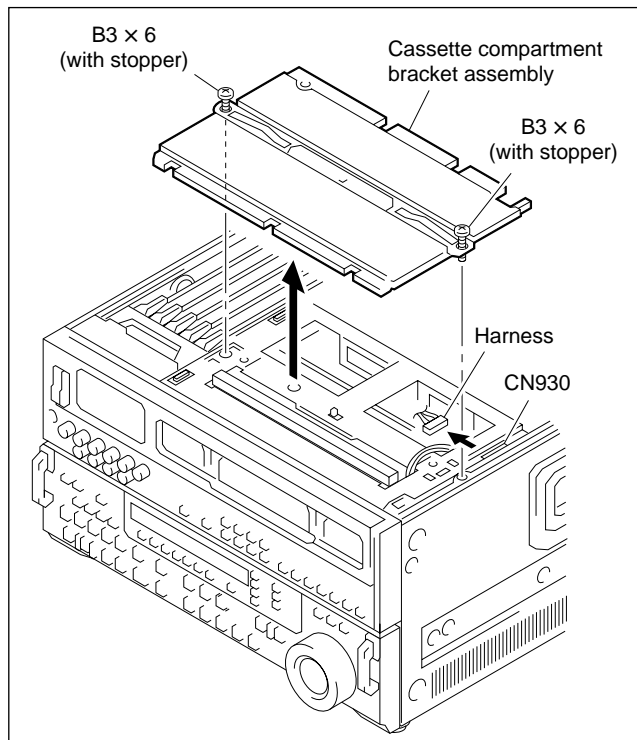
## 2-5. Cassette Compartment Removal/Installation

### Notes

- Turn off the power and unplug the power cord before starting the removal/installation.
- The cassette compartment cannot be removed with the cassette tape inserted. Press the EJECT button with the power turned on and eject the cassette tape.  
If the cassette compartment does not move due to an electric trouble, take out the cassette tape manually. (Refer to “2-12. How to Take out the Cassette when the Tape is Slacking”).)

### Removal

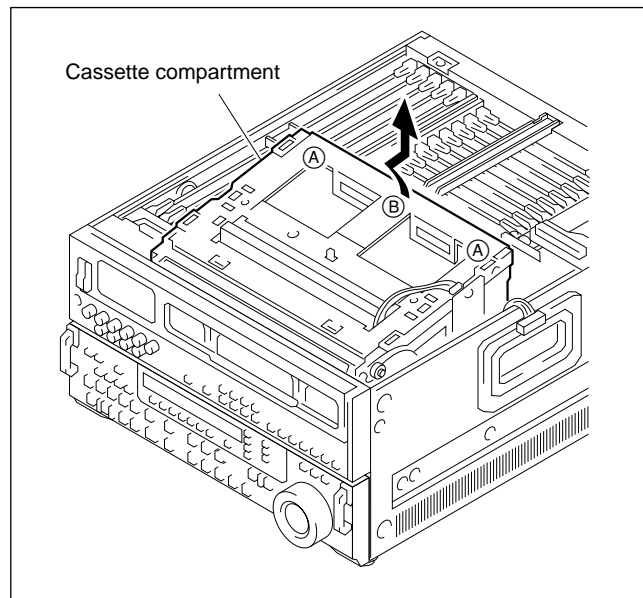
- (1) Remove the upper lid.  
(Refer to section “2-3-1. Upper Lid, Side Panels, and Bottom Plate Removal/Installation”).)
- (2) Remove the plate MD assembly.  
(Refer to section “2-4. Plate MD Assembly Removal/Installation”).)
- (3) Loosen the two screws, then remove the cassette compartment bracket assembly.
- (4) Disconnect the harness from the connector (CN930) on CL-29 board.  
Keep the harness out of the way of the panel.



- (5) Hold the cassette compartment at the portions (A) and slightly lift up the cassette compartment (by 1 cm). When the four cassette compartment positioning legs come off from the four positioning holes on a mechanical deck, shift the cassette compartment backward (by 1 cm) to the position where the cassette lid can be completely seen when viewed from just above.
- (6) Hold the cassette compartment at the portions (B), then slowly raise the cassette compartment upward to remove it.

### Notes

- Being careful not to contact the gear on the right of the cassette compartment with the chassis, slowly raise while slightly sliding the cassette compartment back-and-forth.
- Never move the cassette compartment to the right and left. If unnecessary force is applied to right and left, the gear or parts may come off.
- Place the cassette compartment with the cassette lid up or with cassette compartment positioning legs down.  
(If it is put with the cassette lid down, the flexible card wire/board might be damaged.)

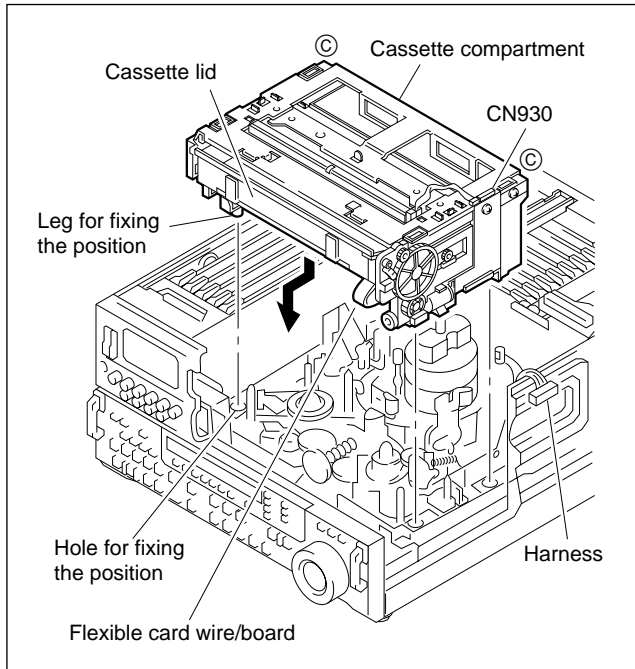


## Installation

- (7) Place the cassette compartment into the unit in the direction as shown in the figure (with the cassette lid down).

### Notes

- Being careful not to contact the gear on the right of the cassette compartment with the chassis, slowly insert while slightly sliding the cassette compartment back-and-forth.
  - Never move the cassette compartment to the right and left. If unnecessary force is applied to the right and left, the gear or parts may come off.
- (8) Press the positions ③ of the cassette compartment as shown in the figure, and then fit the four positioning legs into the four positioning holes in the mechanical deck.



- (9) Connect the harness to the connector (CN930) on the CL-29 board.
- (10) Reattach the cassette compartment bracket assembly.
- (11) Reattach the plate MD assembly and the upper lid.

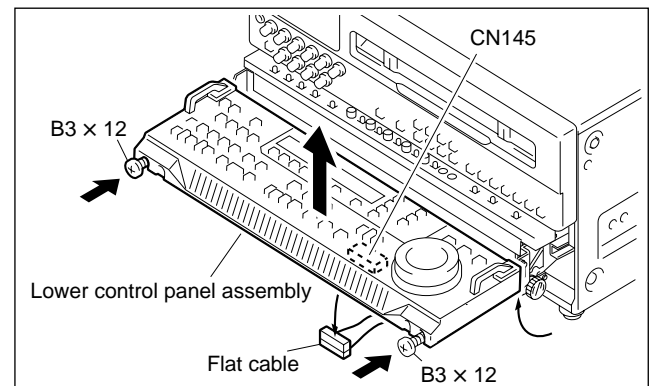
## 2-6. Lower Control Panel Assembly Removal/Installation

### Note

Turn off the power and unplug the power cord before starting the removal/installation.

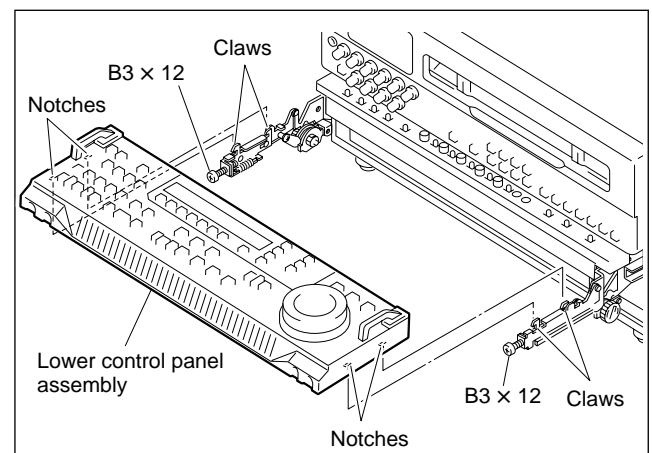
### Removal

- (1) Slightly pull the lower control panel forward, then pull it more strongly to tilt the lower control panel upward (to 90° position).
- (2) Disconnect the flat cable from the connector (CN145) on the back of the lower control panel.
- (3) Loosen two screws in bottom corners of the lower control panel assembly. (Loosen the screws until screw's top are exposed from the lack of the panel assembly.)
- (4) Push the loosened screws in the direction indicated by the arrow and raise the lower control panel assembly.



### Installation

- (5) Set the notches of the panel assembly to the claws of the arms and insert the panel assembly until making a click sound.
- (6) Fix the lower control panel assembly with two screws.



- (7) Connect the flat cable to the connector (CN145).
- (8) Return the lower control panel to 0°, then store.

## 2-7. Circuit Function

System configuration	No.	Board name	Circuit function
Digital process	1	SSX-1/2	SDTI-SCSI transfer
	2	* DPR-71	Digital data processor (Audio/Video encoder, Outer error correction)
	3	DPR-73	Digital data processor (Audio/Video processor)
	4	DIF-42	4:2:2 component serial digital interface with Embedded audio
Video process	5	* VPR-17	Video signal processor (A-D, D-A, Reference clock generator, Composite encoder)
	6	* DEC-65	Analog composite decoder (optional board BKDW-505/506)
	7	AD-105	Analog component video input (optional board BKNW-104)
Analog BETACAM video PB process	8	* DM-89	RF demodulator for Analog Betacam PB
	9	* TBC-24	TBC (A-D, Write clock generator)
	10	* TBC-23	TBC (Sequence and Reference)
Audio process	11	* APR-12	Audio A-D (Analog CH1/2), Audio D-A (Monitor), Analog Betacam audio (LAU) PB circuit
	12	APR-13	Audio A-D (Analog CH3/4), Audio D-A (Analog CH1/2/3/4)
	13	DIF-44	Audio signal processor, AES/EBU interface (optional kit BKNW-105)
RF process	14	* EQ-56	RF equalizer (REC current cont., PB EQ, Analog BETACAM PB buffer, Inner error correction)
System/servo control	15	SS-63	System control, Servo control
	16	MS-50	Solenoids driver (Pinch, Brakes, Cleaning), Sensors input, Demagnetization head driver
	17	DR-315	Motors driver (Drum, Capstan, Reels, Threading, Reel shift, Cassette up/down)
	18	TC-96	TC REC/PB circuit, TC/FULL erase OSC
Mech. deck driver/sensor	19	SE-341	Connection board with Condensation sensor
	20	PTC-54	Threading FG
	21	CCM-15	Threading motor
	22	CCM-15	Reel shift motor
	23	PD-35	Pinch solenoid connection, Tape end sensor connection
	24	TR-79	T tension sensor, Threading-end and Unthreading-end sensors
	25	PTC-59	Cassette's holes sensor
	26	RM-82	T reel motor
	27	SE-344	T reel FG
	28	RM-82	S reel motor
	29	SE-344	S reel FG
	30	PTC-71	Reel position sensors
	31	TR-78	S tension sensor

\*: The actual name varies depending on the model.

Model name	DPR-71	VPR-17	DEC-65	DM-89	TBC-24	TBC-23	APR-12	EQ-56
DNW-A100	DPR-71	VPR-17	———	DM-89	TBC-24	TBC-23	APR-12	EQ-56
DNW-A100P	DPR-71	VPR-17P	———	DM-89P	TBC-24P	TBC-23PG	APR-12P	EQ-56
DNW-A50/A45	DPR-71B	VPR-17	———	DM-89	TBC-24	TBC-23	APR-12	EQ-56B
DNW-A50P/A45P	DPR-71B	VPR-17P	———	DM-89P	TBC-24P	TBC-23PG	APR-12P	EQ-56B
BKDW-505	———	———	DEC-65	———	———	———	———	———
BKDW-506 (CE)	———	———	DEC-65P	———	———	———	———	———
BKDW-506 (UC)	———	———	DEC-65PG	———	———	———	———	———



System configuration	No.	Board name	Circuit function		
Cassette compartment	32	CL-29	Cassette up/down motor, Cassette down sensors		
	33	LP-81	Lamp of cassette compartment		
	34	PC-70	Cassette-in sensors, Cassette size sensor		
Front panel	35	FP-91	Panel function (Switches, LEDs) control, CAV control level conversion		
	36	VR-223	Audio REC and Phone level VRs, Phone connector		
	37	VR-224	Audio PB level VRs		
	38	* SWC-30	Upper control panel function (Switches, LEDs)		
	39	SWC-31	Sub control panel function		
	40	* KY-364	Lower control panel function		
	41	PTC-69	Search dial sensor, Dial solenoid connection		
Motherboard, connector panel	42	MB-648	Motherboard, Remote control connectors (REMOTE, RS-232C, VIDEO CONTROL)		
	43	CP-277	Connector board (Analog video) with input/output buffer		
	44	CP-278	Connector board (Analog audio input/output)		
	45	CP-308	Connector board (AES/EBU input/output) (optional kit BKNW-105)		
	46	* CP-297	CP-297: Connector board (SDI input/output, SDTI output) with S-P and P-S CP-297B: Connector board (SDI input/output) with S-P and P-S		
	47	CP-300	Connector board (SDTI input) with S-P (optional kit BKNW-103 for DNW-A100/A100P only)		
	48	CP-301	Connector board (TC input/output, MONITOR output)		
	Power	49	AC-169	AC connector board with Breaker	
50		PS unit	Switching regulator (PS=Power supply)		
Hard disk protect	51	SE-378	Thermo sensor, Heat up		
Hard disk drive	52,53	HDD unit	1 pair		
			Model name	525/625	REC/PB time
			DNW-A100/A100P	525/60	max. 88 minutes
			DNW-A50/A50P	625/50	max. 92 minutes
			DNW-A45/A45P	525/60	max. 41 minutes
				625/50	max. 43 minutes

\*: The actual name varies depending on the model.

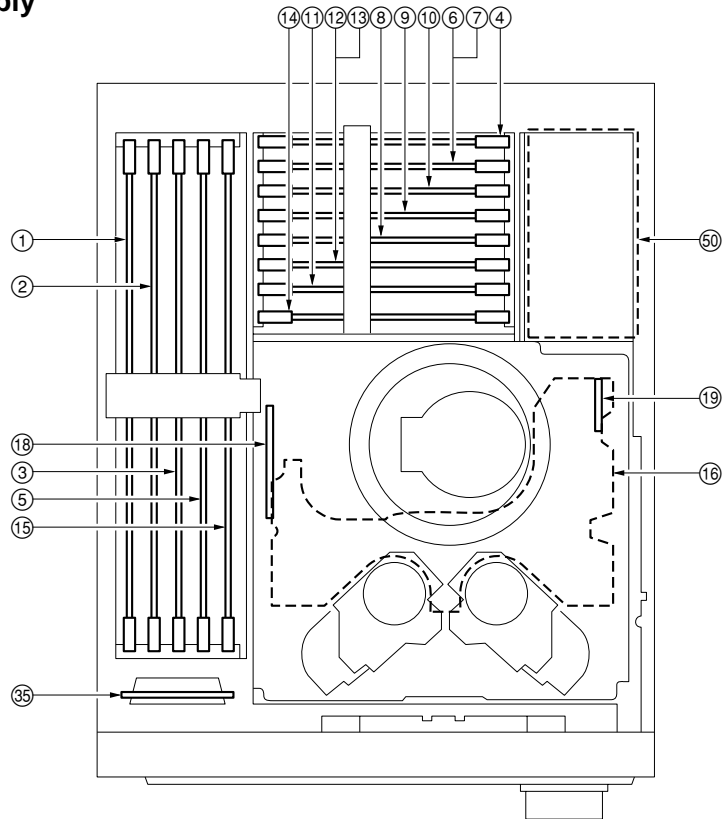
Model name	SWC-30	KY-364	CP-297
DNW-A100	SWC-30	KY-364	CP-297
DNW-A100P	SWC-30	KY-364	CP-297
DNW-A50/A45	SWC-30B	KY-364B	CP-297B
DNW-A50P/A45P	SWC-30B	KY-364B	CP-297B

## 2-8. Location of Main Part

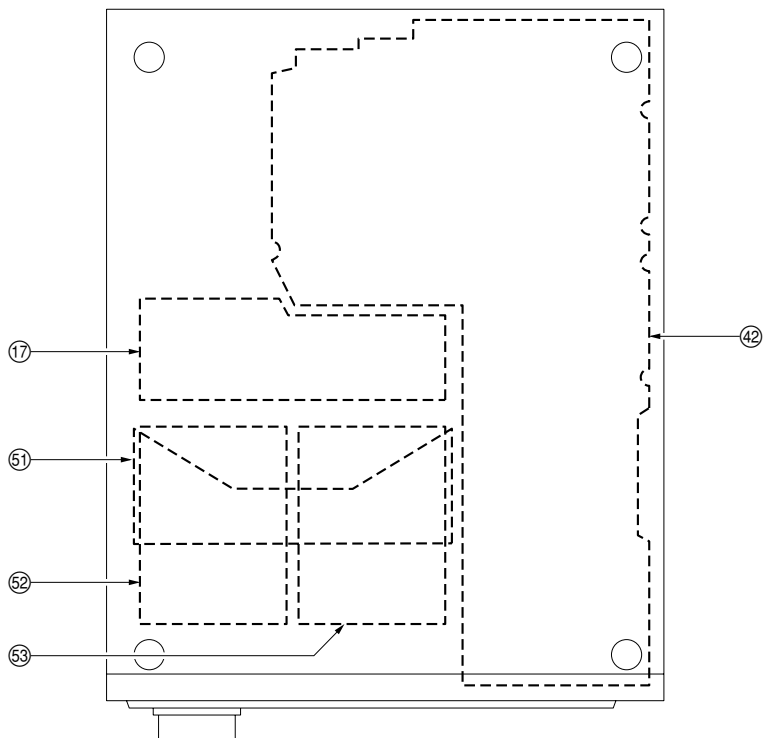
### 2-8-1. Printed Circuit Boards, Power Supply Unit, and HDD Units Location

AC-169 .....	④⑨
AD-105 .....	⑦ (BKNW-104)
APR-12 .....	⑪
APR-13 .....	⑫
CCM-15 .....	②① ②②
CL-29 .....	③②
CP-277 .....	④③
CP-278 .....	④④
CP-297 .....	④⑥
CP-300 .....	④⑦ (BKNW-103)
CP-301 .....	④⑧
CP-308 .....	④⑤ (BKNW-105)
DEC-65 .....	⑥ (BKDW-505/506)
DIF-42 .....	④
DIF-44 .....	⑬ (BKNW-105)
DM-89 .....	⑧
DPR-71 .....	②
DPR-73 .....	③
DR-315 .....	⑬
EQ-56 .....	⑭
FP-91 .....	③⑤
KY-364 .....	④⑩
LP-81 .....	③③
MB-648 .....	④②
MS-50 .....	⑬⑥
PC-70 .....	③④
PD-35 .....	②③
PTC-54 .....	②⑩
PTC-59 .....	②⑤
PTC-69 .....	④①
PTC-71 .....	③⑩
RM-82 .....	②⑥ ②⑧
SE-341 .....	⑬⑨
SE-344 .....	②⑦ ②⑨
SE-378 .....	⑤①
SS-63 .....	⑬⑤
SSX-1/2 .....	①
SWC-30 .....	③⑧
SWC-31 .....	③⑨
TBC-23 .....	⑩⑩
TBC-24 .....	⑨⑨
TC-96 .....	⑬⑧
TR-78 .....	③①
TR-79 .....	②④
VPR-17 .....	⑤⑤
VR-223 .....	③⑥
VR-224 .....	③⑦

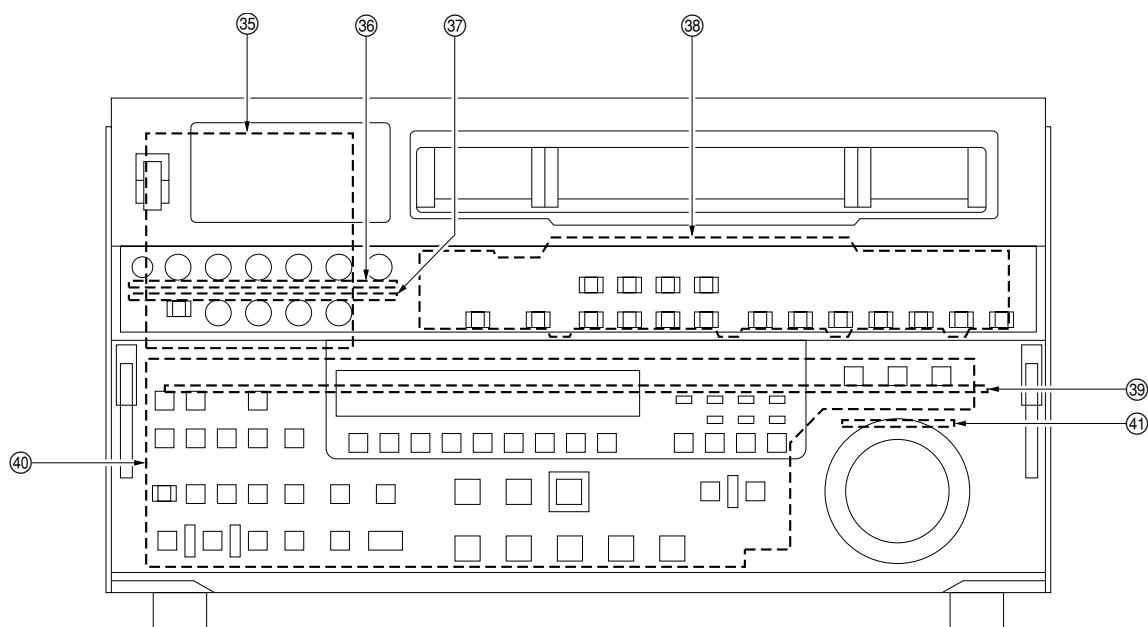
HDD .....	⑤② ⑤③
Power supply unit ...	⑤④



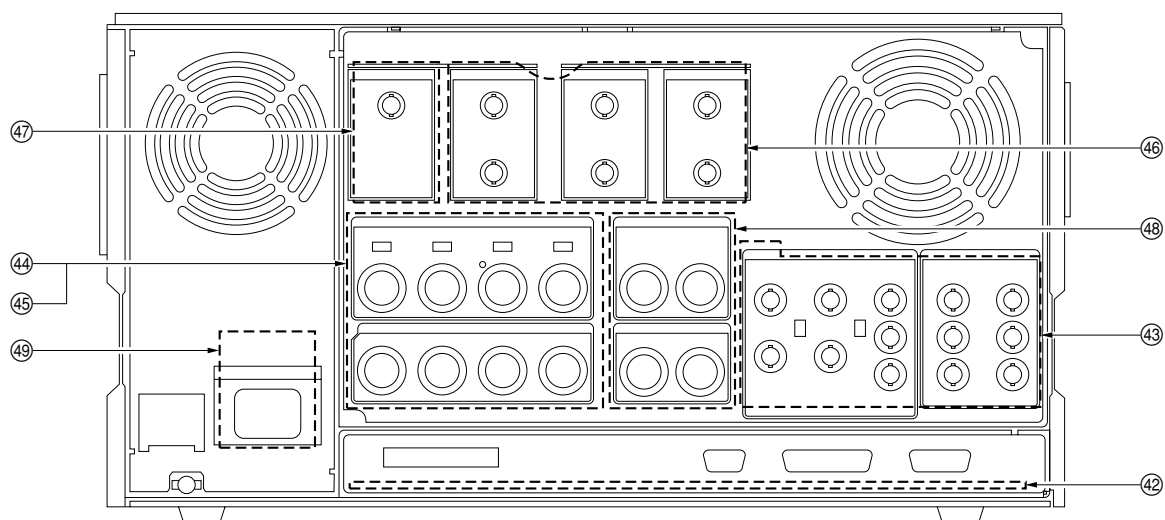
< Top View >



< Bottom View >



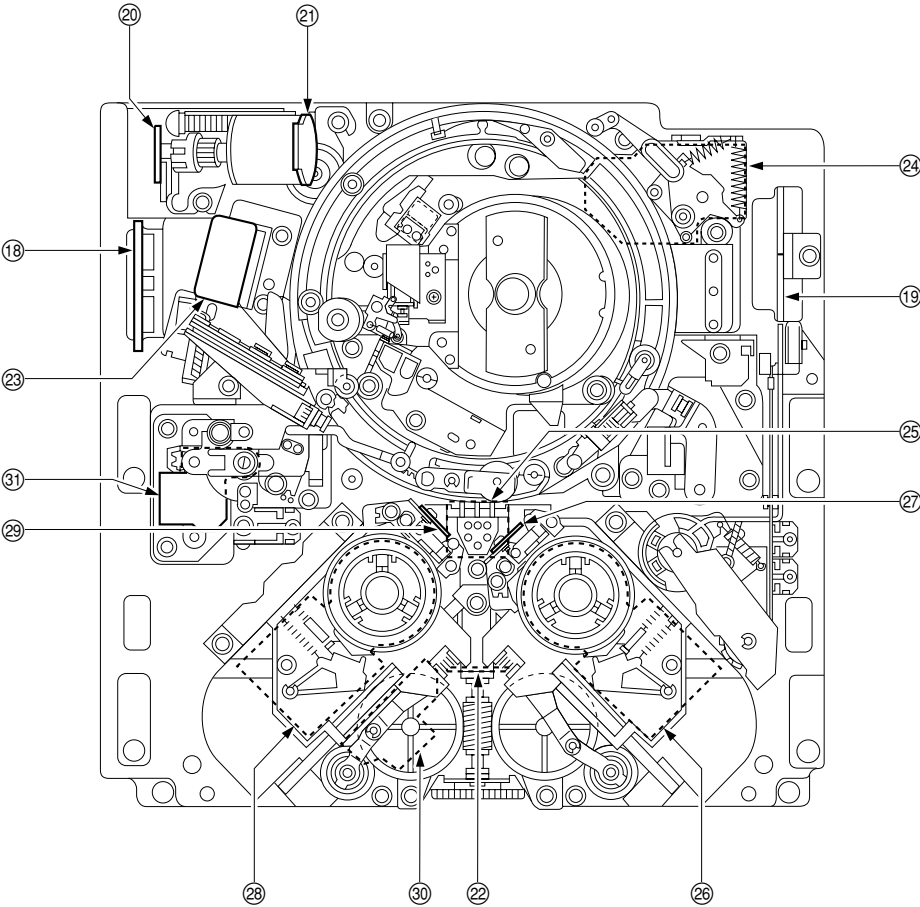
&lt; Front View &gt;



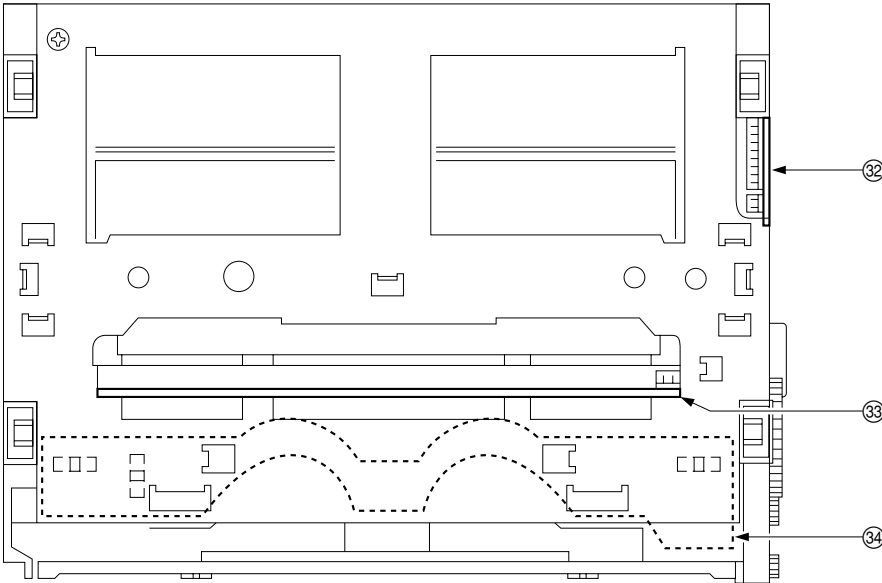
&lt; Rear View &gt;

**Note**

These figures are for DNW-A100.

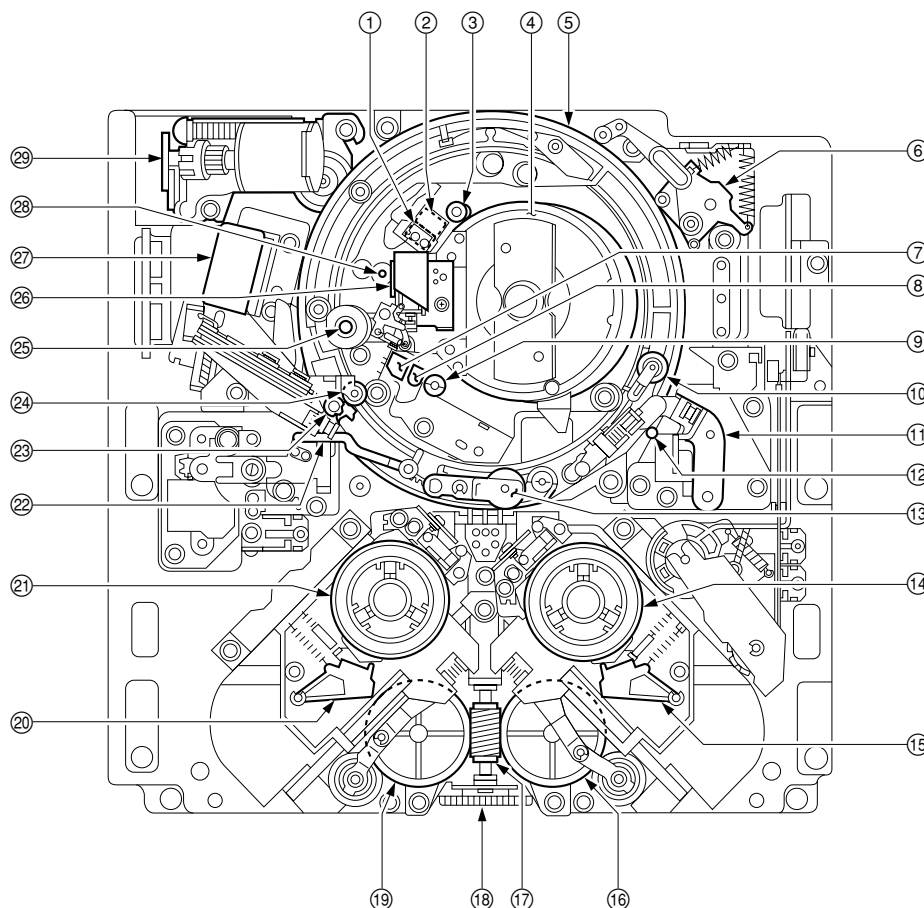


< Top View of Mechanical Deck >



< Top View of Cassette Compartment >

## 2-8-2. Main Mechanical Parts Location

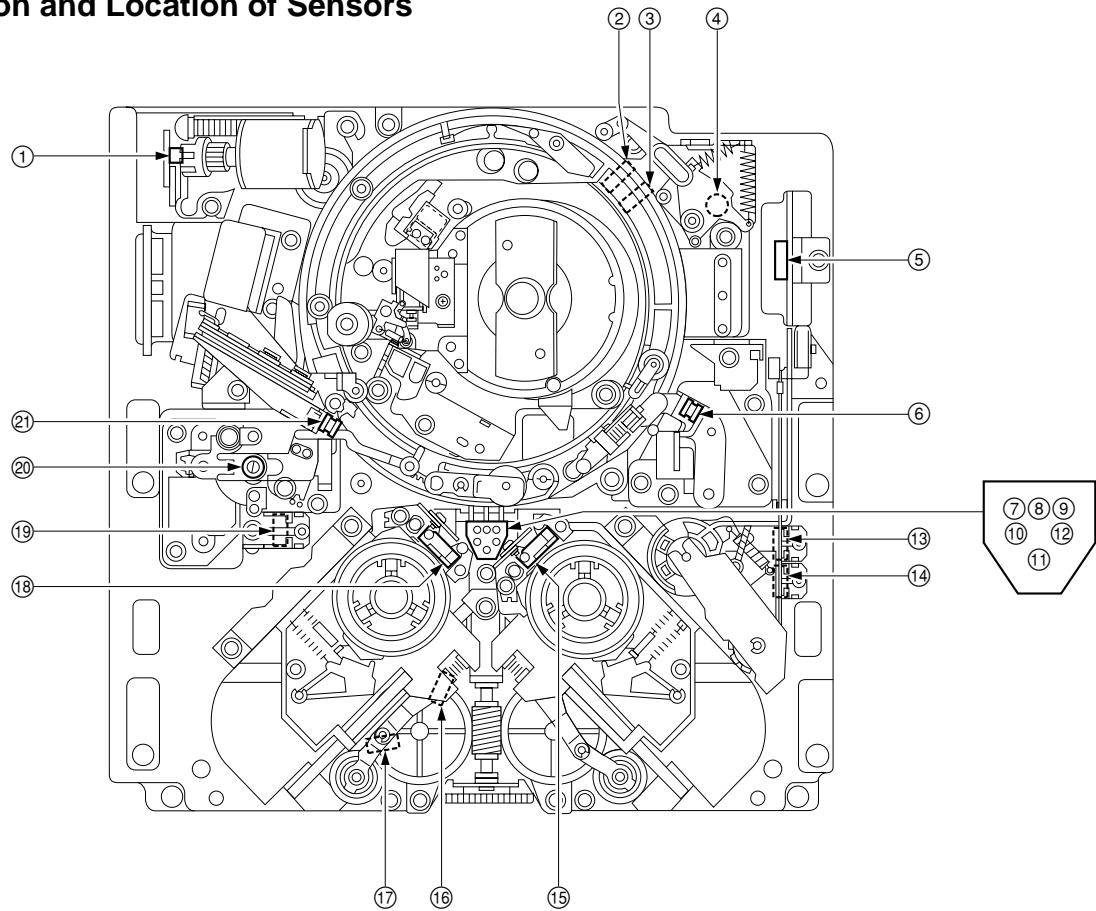


< Top View of Mechanical Deck >

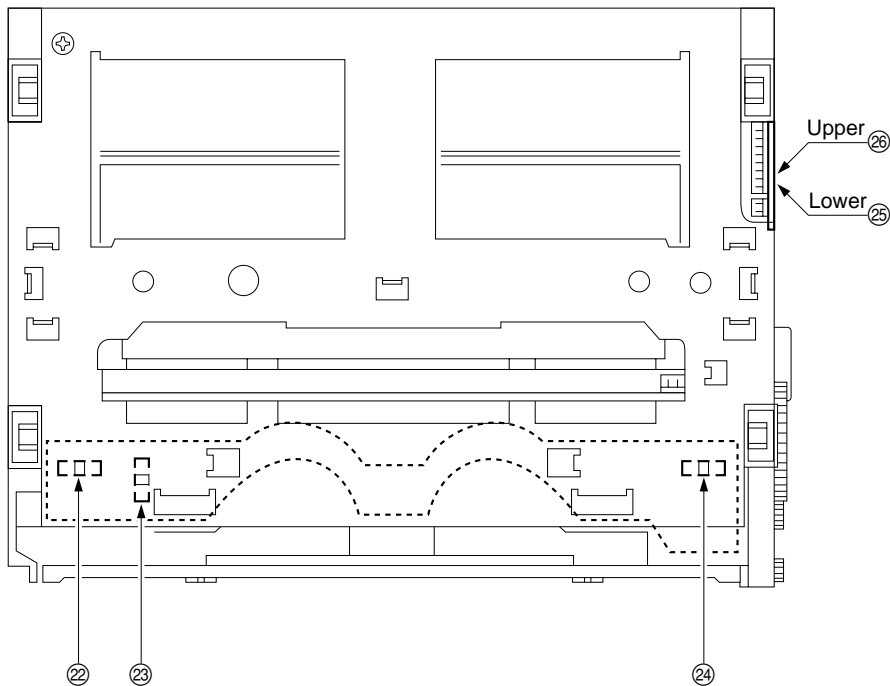
### INDEX

- |                           |                         |
|---------------------------|-------------------------|
| ① Audio/TC head           | ⑩ Audio/TC head cleaner |
| ② Audio/TC erase head     | ⑪ T drawer arm          |
| ③ TG-3 tape guide         | ⑫ TG-10 tape guide      |
| ④ Head drum               | ⑬ Pinch roller          |
| ⑤ Threading ring          | ⑭ T reel table          |
| ⑥ T tension regulator arm | ⑮ T brake assembly      |
| ⑦ Full erase head         | ⑯ T worm wheel          |
| ⑧ CTL head                | ⑰ Worm gear             |
| ⑨ TG-2 tape guide         | ⑱ Drive gear            |
|                           | ⑲ S worm wheel          |
|                           | ⑳ S brake assembly      |
|                           | ㉑ S reel table          |
|                           | ㉒ S tension regulator   |
|                           | ㉓ Tape cleaner          |
|                           | ㉔ TG-0 tape guide       |
|                           | ㉕ Capstan shaft         |
|                           | ㉖ Cleaning roller block |
|                           | ㉗ Pinch press block     |
|                           | ㉘ TG-4 tape guide       |
|                           | ㉙ Threading gear block  |

2-9. Function and Location of Sensors



< Top View of Mechanical Deck >



< Top View of Cassette Compartment >

**① Threading motor FG sensor**

This sensor detects the rotation speed of the threading motor. The output signal of this sensor enters the threading motor servo circuit, and controls the threading/unthreading speed to protect the tape during threading and unthreading operation.

**② Unthreading-end sensor****③ Threading-end sensor**

These sensors detect whether the threading ring reaches the threading-end or unthreading-end position.

**④ T tension regulator arm sensor**

This sensor detects the position of a T tension regulator arm. During recording and playback, the output signal of this sensor enters the T reel motor servo circuit, and controls the reel torque to keep a constant T tape tension.

**⑤ Condensation sensor**

This sensor detects whether the dew condensation occurs in the unit.

**⑥ Tape top sensor**

This sensor detects the beginning of the tape, and in addition detects the end of the tape that runs in the reverse direction.

**⑦ Reel hub diameter sensor**

This sensor detects the reel hub diameter detection tab of a cassette.

The reel hub with two types of diameters (thin and thick) is available according to the length of a tape stored in a cassette. This sensor is used to discriminate the diameter. The output signal of this sensor enters the servo circuit of take-up and supply reel motors, and controls the reel rotation speed and torque during tape transport.

**⑧ Metal/oxide tape sensor**

This sensor detects the metal tape detection tab of a Betacam/Betacam SP cassette.

This sensor is used to discriminate whether the tape stored in a Betacam/Betacam SP cassette is an oxide tape or metal particle tape.

**⑨ Tape thickness sensor**

This sensor detects the tape thickness detection tab of a cassette.

This sensor is used to discriminate the thickness of the tape stored in a cassette.

**⑩⑪⑫ Cassette classification sensors**

These sensors detect the three cassette type detection tabs of a cassette.

These sensors are used to discriminate whether a cassette can be used in this unit.

**⑬ L cassette (SP) REC inhibit sensor**

This sensor (switch) detects the condition of a REC inhibit plug for the Betacam/Betacam SP large cassette.

**⑭ L cassette (SX) REC inhibit sensor**

This sensor (switch) detects the condition of a REC inhibit plug for the Betacam SX large cassette.

**⑮ T reel table FG sensor**

This sensor detects the rotation speed of the take-up reel motor. The output signal of this sensor enters the reel motor servo circuit, and controls the reel table rotation speed.

**⑯ Reel S position sensor****⑰ Reel L position sensor**

These sensors detect whether the reel table moves to the correct position according to the size of the inserted cassette.

**⑱ S reel table FG sensor**

This sensor detects the rotation speed of the supply reel motor. The output signal of this sensor enters the reel motor servo circuit, and controls the reel table rotation speed.

**⑲ S cassette REC inhibit sensor**

This sensor (switch) detects the condition of a REC inhibit plug for the small cassette.

**⑳ S tension regulator arm sensor**

This sensor detects the position of an S tension regulator arm. During recording and playback, the output signal of this sensor enters the S reel motor servo circuit, and controls the reel torque to keep a constant S tape tension.

**㉑ Tape end sensor**

This sensor detects the end of the tape that runs in the forward direction.

**㉒ Cassette-in sensor (L)**

This sensor detects whether a cassette is being inserted.

**㉓ Cassette size sensor**

This sensor detects whether the inserted cassette is L size or S size.

**㉔ Cassette-in sensor (R)**

This sensor detects whether a cassette is being inserted.

**㉕ Cassette-down (2) sensor****㉖ Cassette-down (1) sensor**

These sensors detect the movement (position) of a cassette compartment by the combination of the detection state of the two sensors and a cassette-in sensor.

## Heat up sensor

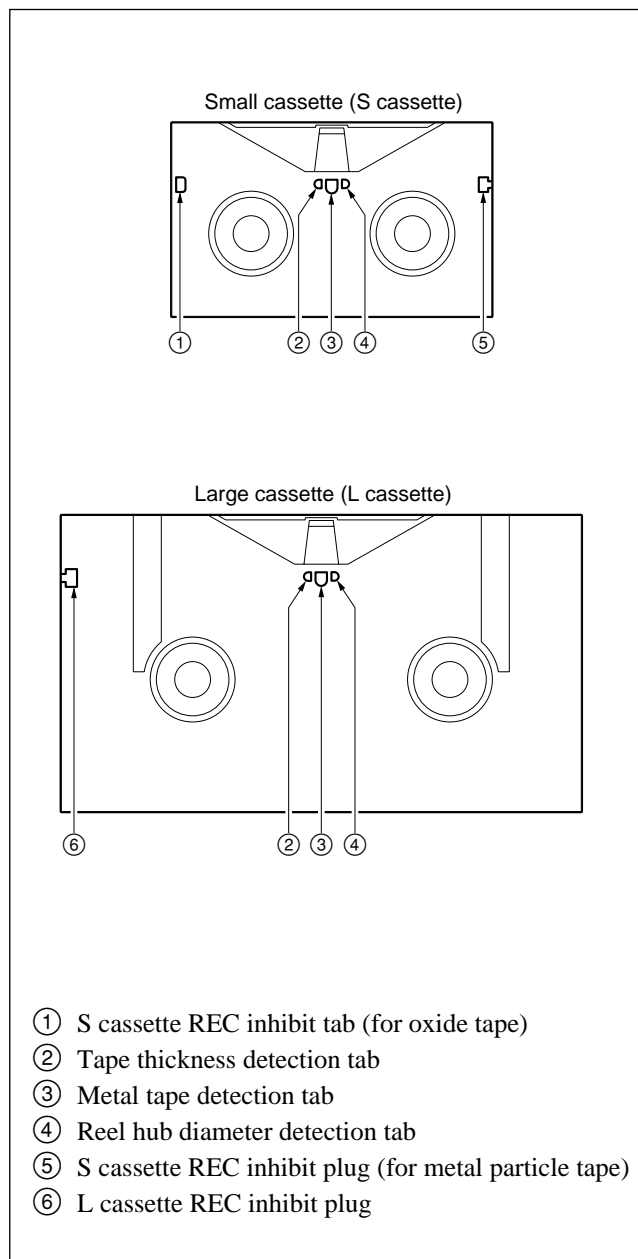
This sensor determines the temperature of the hard disk drive.

Heats the hard disk drives by the heat up device when the temperature becomes less 5°C.

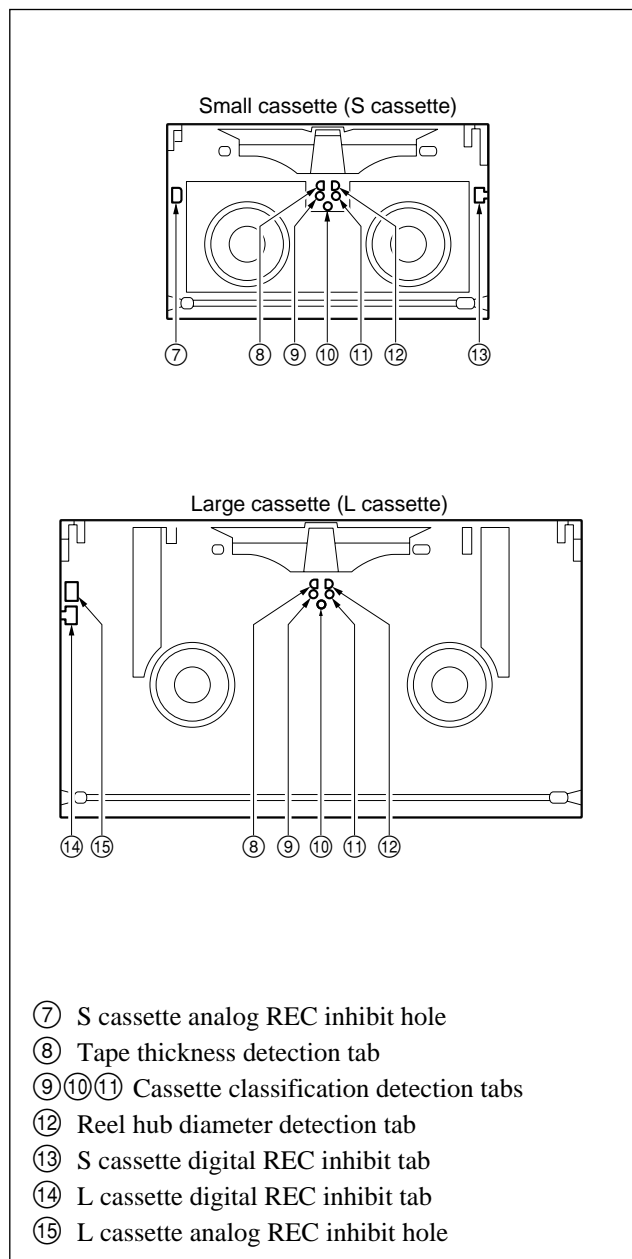
## 2-10. System of Cassette

As shown in the figure below, plugs and tabs are provided at the back side of the cassette tape.

### Cassette for Betacam or Betacam SP

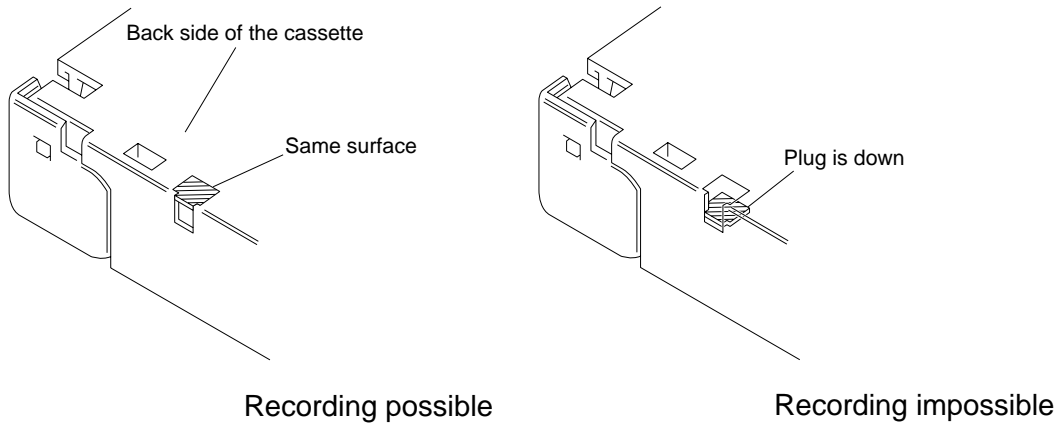


### Cassette for Betacam SX





REC Inhibit Plugs



Detection Tabs

In cassette for Betacam or Betacam SP

No.	Use	With tab (Close hole)	Without tab (Open hole)
②	Tape thickness detection	Thick (Tape thickness is 20 μm)	Thin (Tape thickness is 15 μm)
③	Metal tape detection	Oxide tape	* Metal particle tape
④	Reel hub diameter detection	Small hub	Large hub

\* : For the metal particle tape, digital recording can be performed using a Betacam SX format.

In cassette for Betacam SX

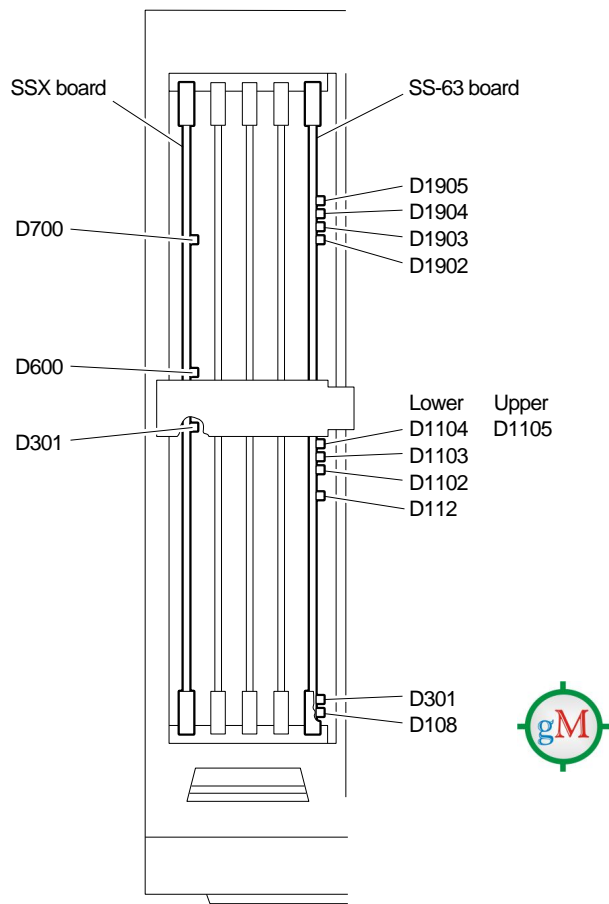
No.	Use	With tab (Close hole)	Without tab (Open hole)
⑧	Tape thickness detection	Tape thickness is 14.5 μm	Tape thickness is other than 14.5 μm
⑫	Reel hub diameter detection	Small hub	Large hub
⑨⑩⑪	Cassette classification detection	Without tab (open hole) at only ⑨ for Betacam SX cassette. Represents the cassette classification by combination of three tabs. (See below)	

Cassette classification detection tabs

○ : with tab (close hole), ● : without tab (open hole)

State of tabs ⑨⑩⑪	Cassette class	Remake
○○○	Betacam or Betacam SP	——
●○○	Betacam SX	——
○○●	Digital Betacam	Unusable
●●○, ●●●, ●○○, ●○●, ○●●	Except the above class	Unusable

2-11. Function of LEDs on Circuit Boards

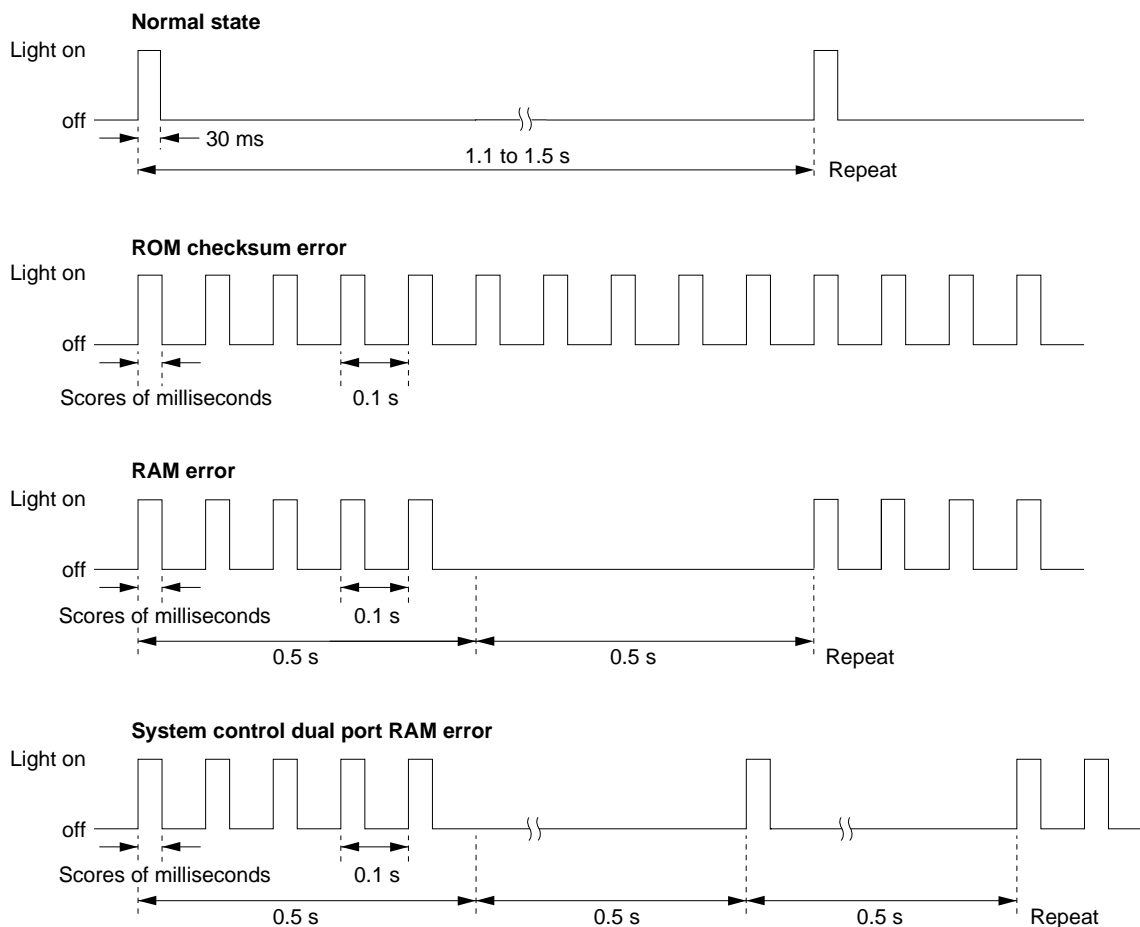


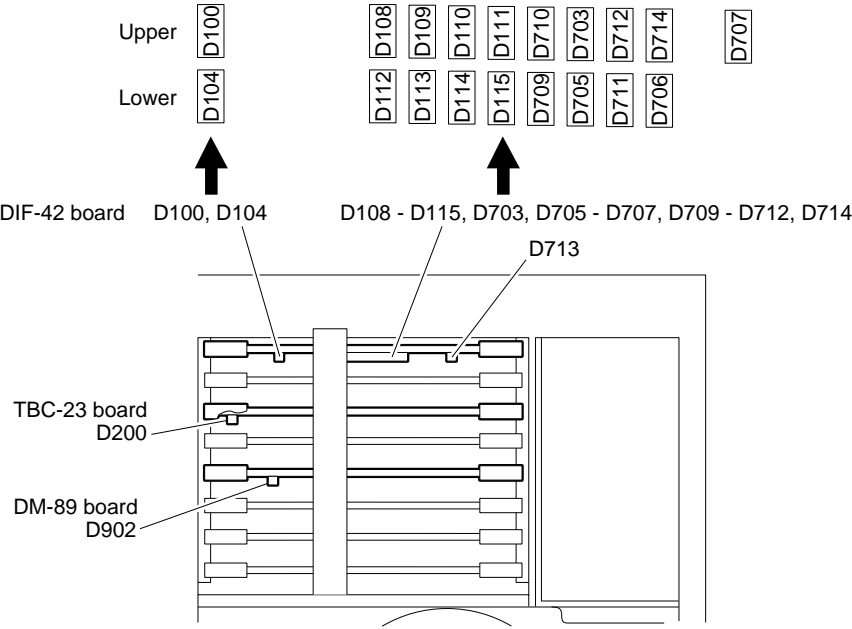
SSX board

LED No.	Name	Color	Description	Normal state
D301	ERROR	Red	Lights when an error occurs in microcomputer.	Blinks or Off
D600	SDTI RX	Red	Lights when SDTI signal is input to SSX board.	——
D700	SDTI TX	Red	Lights when SDTI signal is output from SSX board.	——

**SS-63 board**

LED No.	Name	Color	Description	Normal state
D108	SV	Amber	Represents the result of communication test of ROM and RAM in power-on by blinking pattern. (Refer to below.)	Blinks
D112	TRVR	Amber	Lights when the tracking VR is enable.	Off
D301	DRUM	Amber	Blinks when the drum microcomputer (IC314) is under normal operation. Usually lights for 30 ms at intervals of 1.1 to 1.5 s. The blinking interval is inverted when the drum is locked.	Blinks
D1102	SY1 STS1	Green	Blinks when SYS1 CPU operates normally.	Blinks
D1103	SY1 STS2	Green	Lights in good communications between SYS1 CPU and KY MPU (KY-364 board). Turn off in bad communications between SYS1 CPU and KY MPU (KY-364 board).	On
D1104	MAINT	Green	Lights during executing maintenance mode.	Off
D1105	SY1 ERR	Red	Lights when SYS1 CPU does not operate normally. Blinks in bad communications between SYS1 CPU and other CPU/MPU (SYS2, KY, etc.)	Off
D1902	SY2 STS1	Green	Blinks when SYS2 CPU operates normally.	Blinks
D1903	SY2 STS2	Green	Lights in good communications between SYS2 CPU and SV CPU. Turn off in bad communications between SYS2 CPU and SV CPU.	On
D1904	SY2 STS3	Green	Lights in good communication between SYS2 CPU and SYS1 CPU. Turn off in bad communications between SYS2 CPU and SYS1 CPU.	On
D1905	SY2 ERR	Red	Lights when SYS2 CPU does not operate normally. Blinks in bad communications between SYS2 CPU and other CPU (SYS1, SV, etc.).	Off

**Blinking pattern of D108 on SS-63 board**



**DM-89 board**

LED No.	Name	Color	Description	Normal state
D902	ADJUST	Amber	Usually lights for scores of milliseconds at intervals of about 1 s. The blinking interval is inverted when the DM-89 board is in the adjustment mode: when switch S901-No.1 on DM-89 board is set to ON.	Blinks

**TBC-23 board**

LED No.	Name	Color	Description	Normal state
D200	TBC	Amber	Lights once a second when TBC microcomputer is under normal condition.	Blinks

**DIF-42 board**

LED No.	Name	Color	Description	Normal state	
				525/60 system	625/50 system
D100	RX AUDIO EXIST CH-1	Green	Lights when an AUDIO CH-1 signal is detected from the signal received by the SDI INPUT connector.	On	On
D104	RX AUDIO ERROR CH-1	Red	Lights when an error occurs in the AUDIO CH-1 signal detected from the signal received by the SDI INPUT connector or when an AUDIO CH-1 signal cannot be received normally.	Off	Off
D108	RX EDH D1	Green	Lights when the signal received by the SDI INPUT connector conforms to the 4:2:2 component format.	On	On
D109	RX EDH 525	Green	Lights when the EDH circuit block discriminated that the signal received by the SDI INPUT connector is a 525/60 system signal.	On	Off
D110	RX EDH EXIST	Green	Lights when the EDH circuit block detected that the SDI format signal exists in the SDI INPUT connector.	On	On
D111	RX EDH VALIDITY	Green	Lights when the signal received by the SDI INPUT connector conforms to the EDH.	On	On
* D112	RX EDH OTHER ANC ERROR	Red	Lights when other ancillary data exists in the EDH block of the signal received by the SDI INPUT connector.	Off	Off
* D113	RX EDH AP ERROR	Red	Lights when an active picture EDH error is detected from the signal received by the SDI INPUT connector.	Off	Off
* D114	RX EDH FF ERROR	Red	Lights when an full-field EDH error is detected from the signal received by the SDI INPUT connector.	Off	Off
* D115	RX EDH ANC ERROR	Red	Lights when an ancillary data EDH error is detected from the signal received by the SDI INPUT connector.	Off	Off
D703	SDI INPUT EXIST	Green	Lights when detected that the SDI format signal exists in the SDI INPUT connector.	On	On
D705	SDI TRS ERROR	Red	Lights when the SDI format signal cannot be received normally from the SDI INPUT connector.	Off	Off
D706	SDI 625	Green	Lights when the SDI format signal received by the SDI INPUT connector is a 625/50 system signal.	Off	On
D707	INDEX ERROR	Red	Lights when no color frame information is contained in the signal received by the SDI INPUT connector or when the information is not correct.	Off	Off
**D709	SDTI TRS ERROR	Red	Lights when the SDTI format signal cannot be received normally from the SDTI INPUT connector.	Off	Off
**D710	SDTI INPUT EXIST	Green	Lights when detected that the SDTI format signal exists in the SDTI INPUT connector.	On	On
**D711	SDTI 625	Green	Lights when the signal received by the SDTI INPUT connector is a 625/50 system signal.	Off	On
**D712	SDTI 525	Green	Lights when the signal received by the SDTI INPUT connector is a 525/60 system signal.	On	Off
D713	VCO ADJ	Green	Lights when electronic volume (EVR) data comes near the proper value during VCO free-running adjustment in the maintenance mode.	Off	Off
D714	SDI 525	Green	Lights when the signal received by the SDI INPUT connector is a 525/60 system signal.	On	Off

\*: There LEDs operate when the received signal conforms to the EDH.

\*\*: There LEDs operate only the DNW-A100/A100P with optional kit BKNW-103.

EDH: Error Detection and Handling

## 2-12. How to Take out the Cassette when the Tape is Slacking

### Note

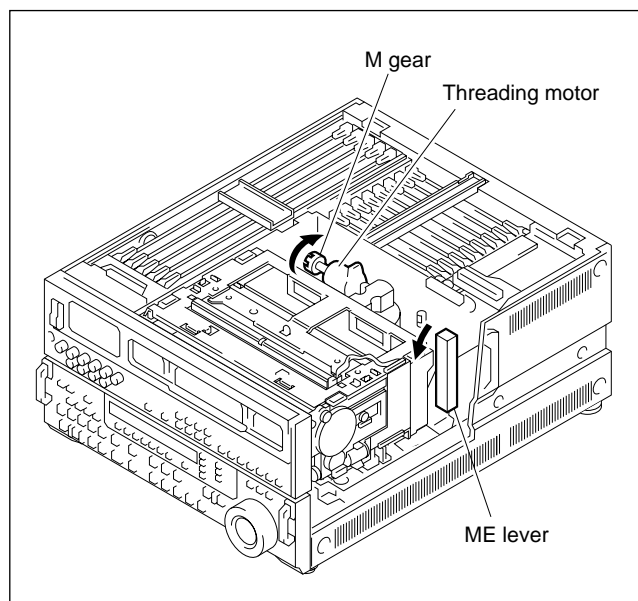
Turn off the power and unplug the power cord before starting the working.

When the tape is slacked in this unit, follow the steps below to take out the cassette tape.

### Note

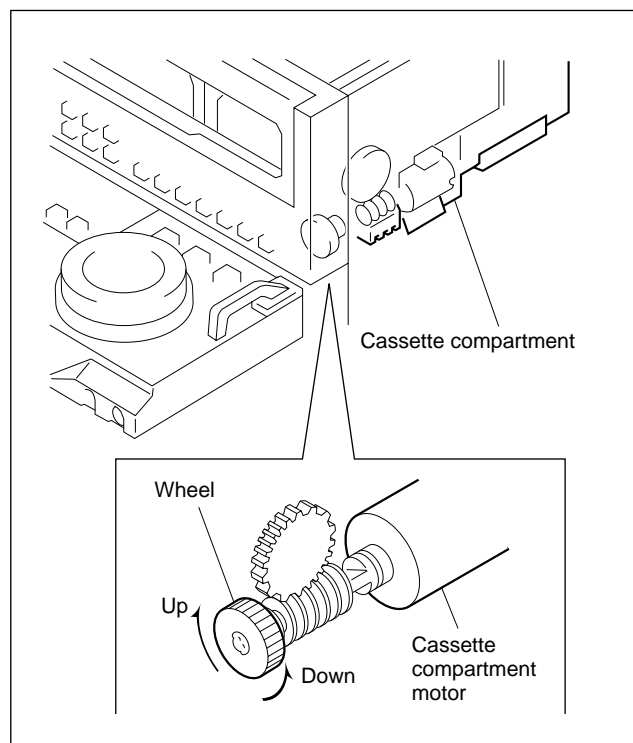
The tape may be damaged. Take out the cassette tape with care.

- (1) Turn off the power.
- (2) Remove the upper lid.  
(Refer to “2-3-1. Upper Lid, Side Panels, and Bottom Plate Removal/Installation”.)
- (3) Remove the plate MD assembly.  
(Refer to “2-4. Plate MD Assembly Removal/Installation”.)
- (4) Rotate the M gear of the threading motor block in the direction of the arrow with the fingers by about a half turn to slack the tape.
- (5) Pull the ME lever toward the front panel side to wind the tape inside the cassette.



- (6) Repeat steps 4 and 5 until the tape is wound completely.

- (7) Slightly pull the lower control panel forward, then pull it more strongly to tilt the lower control panel upward (to 90° position).
- (8) Turn the wheel of the cassette compartment motor clockwise as show in the figure until the cassette is ejected completely.

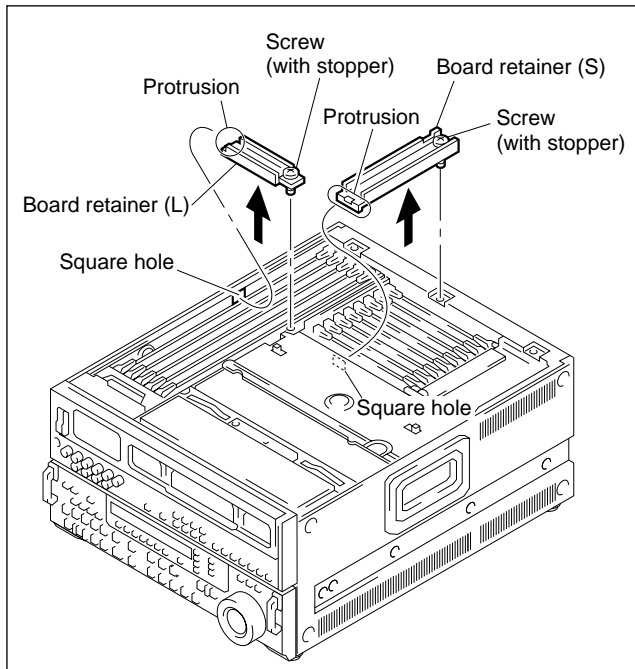


## 2-13. Pulling out/Insertion of Plug-in Board

### Notes

- Turn off the power and unplug the power cord before starting the removal/installation.
- When the plug-in board is replaced, refer to Section 6 “Replacement of Plug-in Boards”.

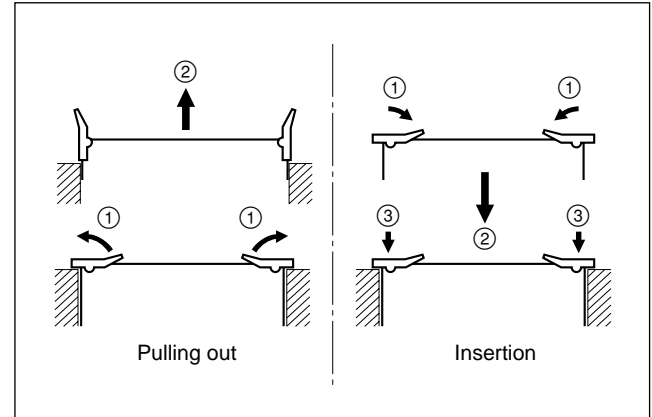
- (1) Remove the upper lid.  
(Refer to “2-3-1. Upper Lid, Side Panels, and Bottom Plate Removal/Installation”.)
- (2) Loosen a screw, and remove the board retainer (L) or (S).



- (3) When removing the SSX, TBC-23, or TBC-24 board, disconnect the connected harness from its board.

SSX board: CN400  
TBC-23 board: CN1  
TBC-24 board: CN1

- (4) Pull up the eject levers on the board to the direction of the arrows. (Disconnect the board from motherboard.)
- (5) Hold the eject levers and slowly pull the board out.



- (6) When removing the APR-12 or EQ-56 board, disconnect the connected harnesses from its board.

APR-12 board:	CN500 (A-1) .....	3P Red
	CN600 (G-1) .....	3P Yellow
EQ-56 board:	CN100 (B-7) .....	6P White
	*CN300 (A-2) .....	3P White
	*CN400 (G-1) .....	3P Red
	CN500 (A-4) .....	4P White
	CN600 (G-4) .....	4P Red
	CN601 (G-5) .....	4P Yellow
	*CN1300 (A-3) .....	3P Black
	*CN1400 (G-2) .....	3P Yellow
	CN1500 (A-5) .....	4P Black
	* : DNW-A100/A100P only	

For insertion, perform in the reverse procedures of pulling out.

### Notes

- After board insertion, push the two eject levers simultaneously to firmly connect the plug-in board to the connector on the motherboard (MB-648 board).
- To reattach the board retainer, tighten the screw after inserting the protrusion of the board retainer into the square hole of chassis.

## 2-14. Fixtures and Adjustment Equipment List

### 2-14-1. Fixtures

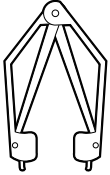
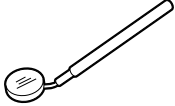
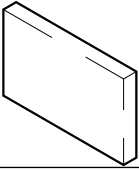
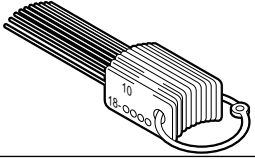
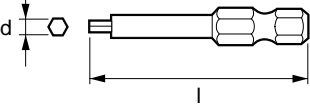
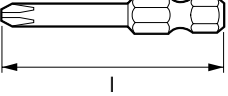
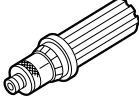
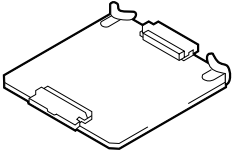
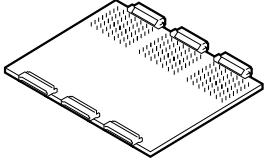
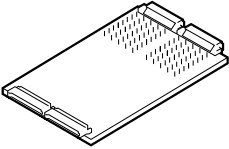
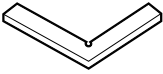
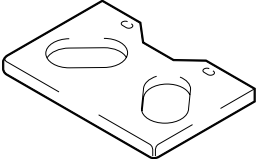
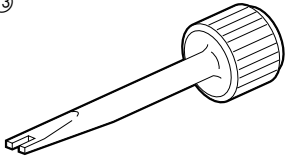
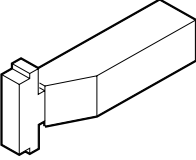
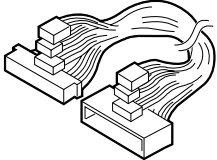
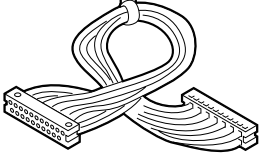
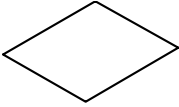
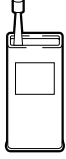
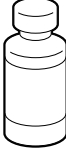

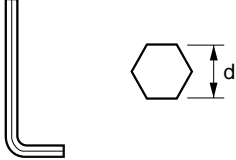
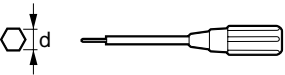
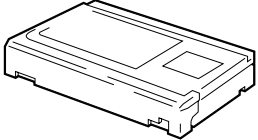
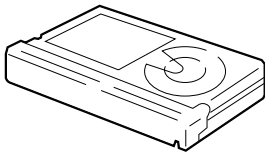
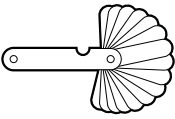

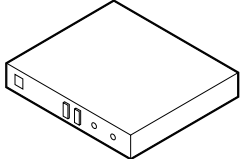
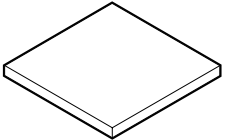
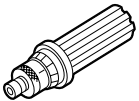
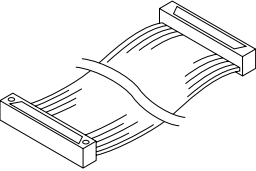
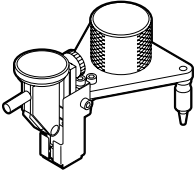
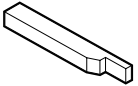
**Note**

The tools that are used only in the maintenance manual part 2 are also described.

Fig. No.	Part No.	Description	[Inscription No.]	For use
1	J-6035-070-A	Extraction tool (for PLCC socket)	—	Extraction of IC (PLCC type)
2	J-6080-029-A	Small dental mirror (round type ø12)	—	Cassette pillar height adjustment
3	J-6086-570-A	Reference flat plate	[SL-657]	AT head zenith adjustment
4	J-6152-450-A	Wire clearance check gauge set	—	Clearance check
5	J-6251-090-A	Torque screwdriver's hexagonal bit (d=2.5 mm, l=120 mm)	—	Tightening screws to fix a drum assembly and upper drum assembly
	J-6323-440-A	Torque screwdriver's hexagonal bit (d=0.89 mm, l=50 mm)	—	Tightening screws to fix a tension regulator roller
6	J-6323-420-A	Torque screwdriver's bit (+2 mm, l=75 mm)	—	Tightening screws to fix a brush/slip ring assembly
	J-6323-430-A	Torque screwdriver's bit (+3 mm, l=90 mm)	—	Tightening screws to fix a reel motor assembly or a ring roller
7	J-6252-510-A	Torque screwdriver (6 kg·cm)(0.6 N·m)	[JB-5251]	Tightening screws
	J-6252-520-A	Torque screwdriver (12 kg·cm)(1.2 N·m)	[JB-5252]	Tightening screws
8	J-6269-810-A	Extension board (S), EX-377	—	Extension of the small-sized plug-in board (DM, TBC, DEC, AD)
9	A-8277-211-A	Extension board (L), EX-555	—	Extension of the large-sized plug-in board
10	A-8277-212-A	Extension board (S), EX-556	—	Extension of the small-sized plug-in board (EQ, APR, DIF)
11	J-6320-870-A	Reel motor shaft slantness check fixture	[MW-087]	Reel motor shaft slantness adjustment
12	J-6320-880-A	Cassette reference plate (L)	[MW-088]	Reel table height adjustment, Reel motor shaft slantness adjustment
13	J-6322-610-A	Tape guide adjustment driver	[MW-261]	Tape path alignment
14	J-6329-350-A	Reel table height gauge	[MW-935]	Reel table height adjustment
15	1-957-071-11	Extension cable set	—	Extension of the power supply unit
16	1-952-684-11	Extension cable (14P)	—	Extension of the TBC-23 or TBC-24 board
17	3-184-527-01	Cleaning cloth (15 cm × 15 cm)	—	Cleaning
18	7-432-114-11	Locking compound (200 g)	—	Inhibits loosening of screws
19	7-661-018-18	Diamond oil NT-68 (50 ml)	—	
20	7-651-000-10	Sony grease SGL-601 (50 g)	—	
21	7-700-736-01	L-shaped hexagonal wrench (d=1.27 mm)	—	
	7-700-736-05	L-shaped hexagonal wrench (d=1.5 mm)	—	
	7-700-736-06	L-shaped hexagonal wrench (d=0.89 mm)	—	
22	7-700-766-04	Hexagonal wrench driver (d=2.5 mm)	—	
23	8-960-075-01	Alignment tape, SR5-1	—	Video/audio alignments (for 525/60 system)
	8-960-075-11	Alignment tape, SR2-1	—	Servo alignments (for 525/60 system)
	8-960-075-51	Alignment tape, SR5-1P	—	Video/audio alignments (for 625/50 system)
	8-960-075-61	Alignment tape, SR2-1P	—	Servo alignments (for 625/50 system)
24	8-960-096-01	Alignment tape, CR2-1B	—	Tracking adjustment (for analog Betacam NTSC) *1
	8-960-096-41	Alignment tape, CR5-1B (metal particle tape)	—	Video alignments (for analog Betacam NTSC) *1
	8-960-096-51	Alignment tape, CR2-1B PS	—	Tracking adjustment (for analog Betacam PAL) *2
	8-960-097-44	Alignment tape, CR5-2A (oxide tape)	—	Video alignments (for analog Betacam NTSC) *1
	8-960-097-45	Alignment tape, CR8-1A (oxide tape)	—	Audio alignments (for analog Betacam NTSC) *1
	8-960-096-91	Alignment tape, CR5-1B PS (metal particle tape)	—	Video alignments (for analog Betacam PAL) *2
	8-960-096-86	Alignment tape, CR8-1B PS (metal particle tape)	—	Audio alignments (for analog Betacam PAL) *2
	8-960-098-44	Alignment tape, CR5-2A PS (oxide tape)	—	Video alignments (for analog Betacam PAL) *2
	8-960-098-45	Alignment tape, CR8-1A PS (oxide tape)	—	Audio alignments (for analog Betacam PAL) *2
25	9-911-053-00	Thickness gauge	—	Clearance check
26	9-919-573-01	Cleaning liquid	—	Cleaning
27	J-6332-240-A	VISC phase adjusting tool	—	VISC alignment for PAL system *2
28	J-6530-060-A	HDD cushion	[DF-006]	Hard disk drive repair
29	J-6530-070-A	Shockless torque screwdriver	[DF-007]	Tighten of screw for HDD installation
30	1-782-030-11	Flat cable assembly (68 core)	—	Extension of the SSX-1 board
31	J-6530-650-A	Head tip protrusion measurement gauge	—	Head tip protrusion check of the video heads
32	J-6190-800-A	Tension regulator slantness check tool	[BW-080]	Slant guide slantness adjustment

\*1: DNW-A100/A50/A45 only \*2: DNW-A100P/A50P/A45P only



① 	② 	③ 	④ 
⑤ 	⑥ 	⑦ 	⑧ 
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## 2-14-2. Equipment for Adjustment

It is recommended to use the equipment listed below or the equivalents.

Each equipment is available as a standard product.

**Note**

The equipment marked \* are used only in the maintenance manual part 2.

Equipment	Model name	Remarks
Analog composite video signal generator (with GENLOCK mode)	Tektronix 1410	(For DNW-A100/A50/A45)
	Tektronix 1411	(For DNW-A100P/A50P/A45P)
Analog composite video signal generator	Tektronix TSG-170A	(For DNW-A100/A50/A45)
	Tektronix TSG-271	(For DNW-A100P/A50P/A45P)
Analog component video signal generator	Tektronix TSG-300	For generating SMPTE/EBU format analog video signal (For DNW-A100/A50/A45)
	Tektronix TSG-371	For generating SMPTE/EBU format analog video signal (For DNW-A100P/A50P/A45P)
Digital component video signal generator *	Tektronix TSG-422 (OP.1S)	For generating 4:2:2 format digital signal
Spectrum analyzer	Advantest R3261A	With external trigger function Bandwidth: more than 100 MHz
Oscilloscope	Tektronix 2465B	
Analog component waveform monitor	Tektronix WFM300 or WFM300A	For measuring analog component video levels
Serial component waveform monitor	Tektronix WFM601	
Analog composite waveform/vector monitor	Tektronix 1750 or 1780R	For measuring analog composite SC-H (For DNW-A100/A50/A45)
	Tektronix 1751 or 1781R	For measuring analog composite SC-H (For DNW-A100P/A50P/A45P)
Audio signal generator	Tektronix SG505 (OP.02)	
Audio analyzer	Tektronix AA501A (OP.02)	For measuring levels (dBm), distortion, and dB ratio
Audio level meter	Hewlett-Packard HP3400A	
Frequency counter	Advantest TR5821AK	
Digital voltmeter	Advantest TR6845	
Monitor with serial digital input	Sony BVM-1311 (with optional accessory BKM-2085-14)	(For DNW-A100/A50/A45)
	Sony BVM-1411 (with optional accessory BKM-2085-14)	(For DNW-A100P/A50P/A45P)
Network analyzer	Anritsu MS420B	
Time code generator *	Sony BVG-1600	(For 525/60 system)
	Sony BVG-1600PS	(For 625/50 system)
Time code reader *	Sony BVG-1500	(For 525/60 system)
	Sony BVG-1500PS	(For 625/50 system)
Terminator	—	75-ohm, BNC type
BNC T adapter	—	75-ohm
Recording tape	Sony BCT-SX series	Cassette tape for Betacam SX

## 2-15. ISR

### 2-15-1. Overview

This unit corresponds to ISR (Interactive Status Reporting) function. When this unit is connected to the personal computer which activates Sony's ISR application software, the status of this unit or the contents of a generated error can be intensively monitored and managed on the monitor screen of a personal computer. The data displayed on the monitor screen can be stored as a file.

#### Note

Please contact your local Sony Sales Office/Service Center about ISR application software, method of using or installing the personal computer which can use this software, and the method of concrete operating.

The major functions are as follows.

#### Monitor functions

- Error code and error message (Refer to Section 3.)
- Display of operation status (Equivalent to the display on the video monitor.)

#### Management functions

- Model name, serial No., destination
- ROM version

Indicating item	Description
Manufacture	Displayed as SONY.
Model name	Displays the model name.
Serial No.	Displays the serial No.
Divece ID	Can give an arbitrary name to this unit and register it.
Destination	Displays the destination. J (For Japan), UC (For the U.S.A. and Canada), CE (Except J and UC)
ROM	Displays the information of the ROMs mounted in this unit.

#### Inspection functions

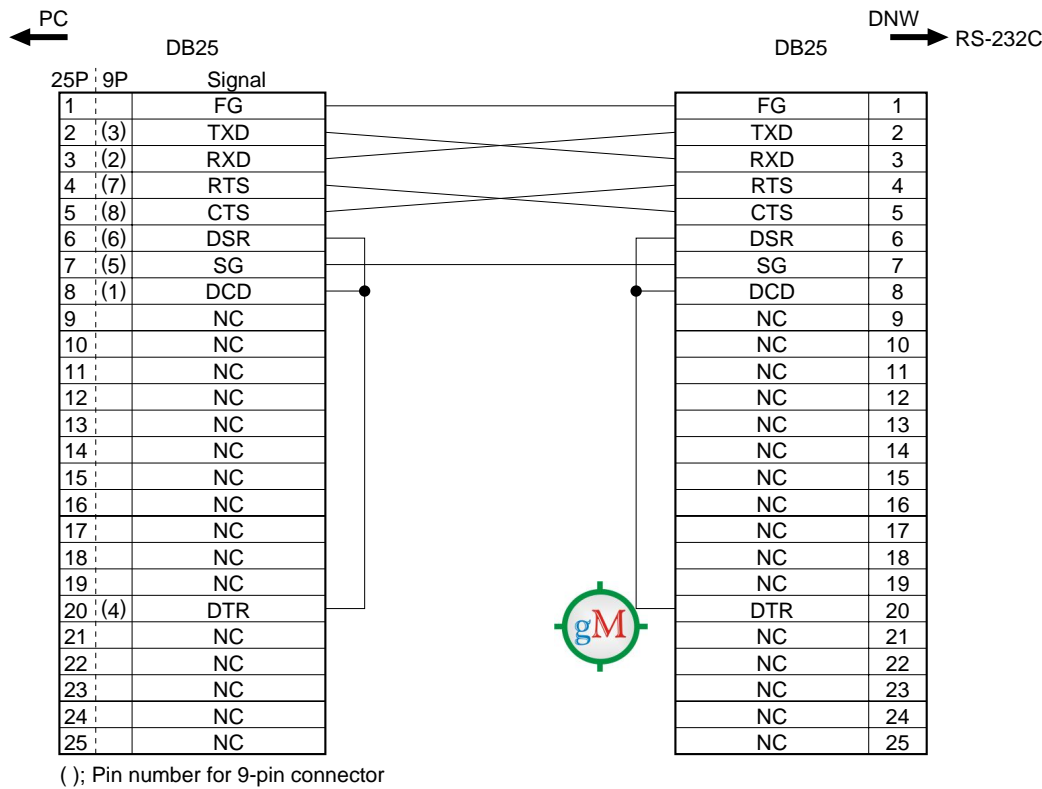
- Hours meter (Equal to hours meter of the setup menu)
- Error logger

2-15-2. Information of Connecting Cable

Prepare the cables by referring the following information.

1. For connecting directly to a personal computer

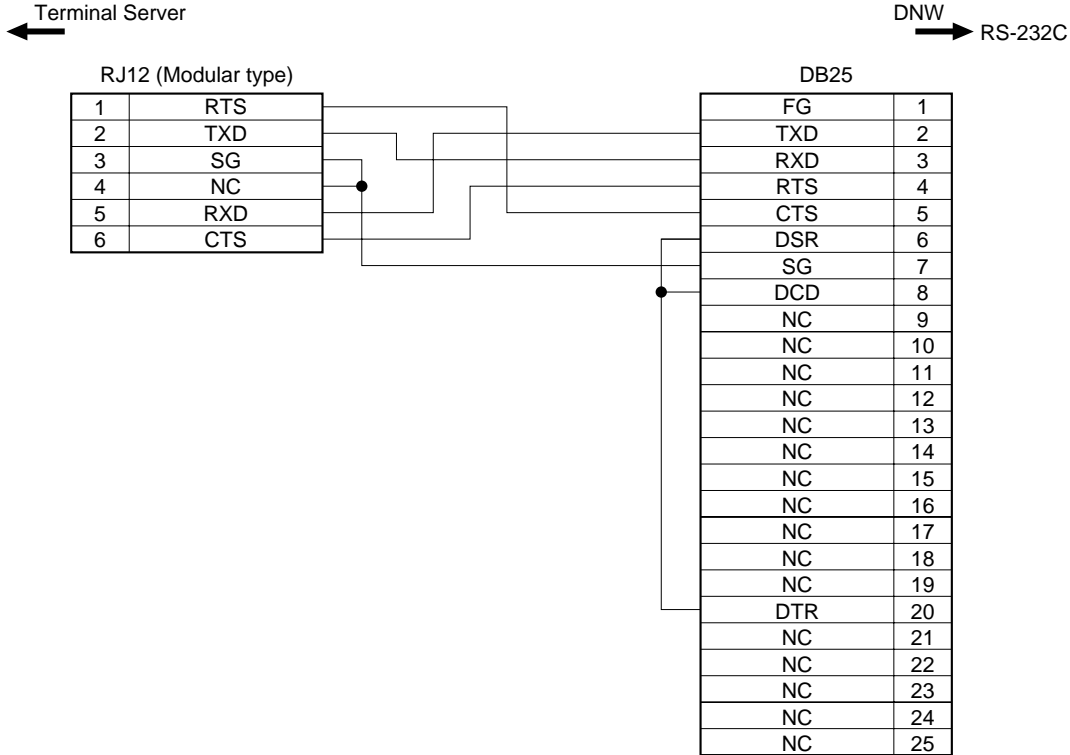
Use the RS-232C cross cable.



## 2. For connecting to a personal computer via LAN (Terminal server: 6-pin port)

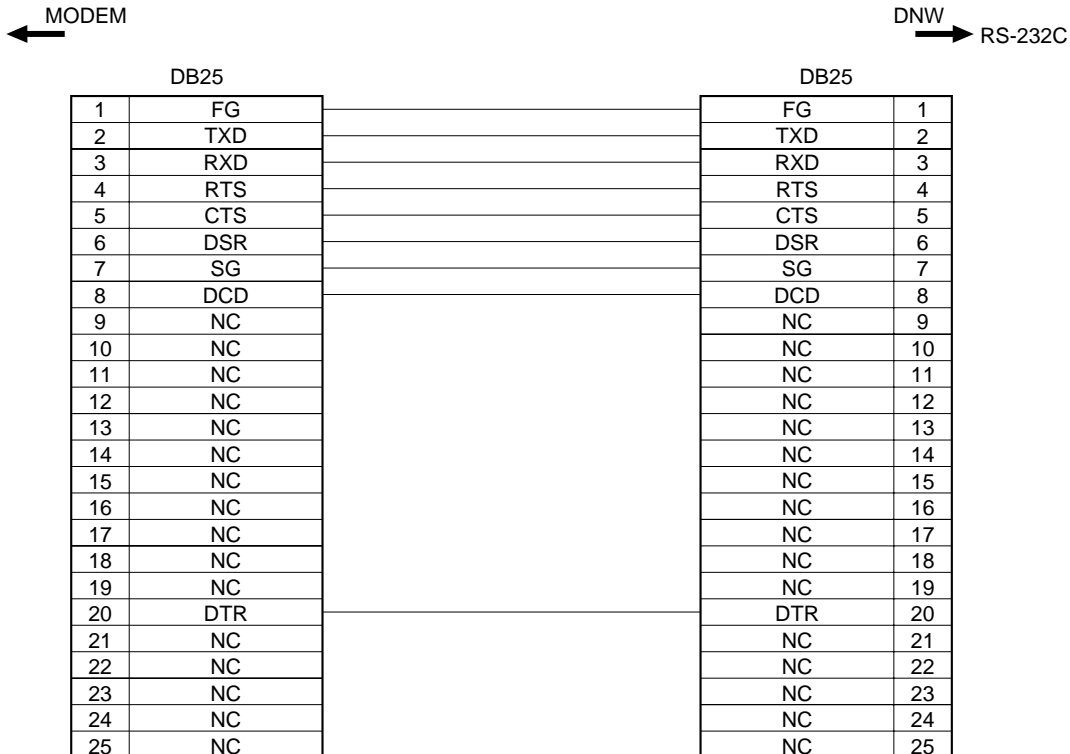
### Note

The connection varies depend on the terminal server. Be sure to check the pin assignment of terminal server side, and follow it.



## 3. For connecting to a personal computer via modem

Use the RS-232C straight cable.



## 2-16. Procedure for Hard Disk Drive Check

If abnormality such as is found (momentary freeze of picture or intermittent of sound) during disk operation, check the hard disk drive equipped with this unit according to the procedure below.

For more details of D0 : ERROR COUNTER, D2 : DIAGNOSIS, D3 : INSTALLATION, and D9 : DISK CLEANING, refer to “4-3. Disk Maintenance Mode (M1)”.

### 1. Confirmation of error counter (D0 : ERROR COUNTER)

In the following case, replace the hard disk drive corresponding to the SCSI ID number.

- When the value of a medium(total)/MEDIUM(T) error counter is more than 10
- When the value of a hardware/HARDWARE error counter is more than 1

In the following case, perform the disk cleaning (D9 : DISK CLEANING).

- When a medium/MEDIUM error counter reads values other than 0

#### Notes

- All user data items (pictures and sounds) memorized in the equipped hard disk are erased when the disk cleaning is performed.
- Do not turn off the power during disk cleaning because the hard disk drive may be damaged.

### 2. Confirmation of operation performance (D2 : DIAGNOSIS)

If even one of the measurement results applies to the case below, replace the hard disk drive corresponding to the SCSI ID number.

- OUTMOST RATE: 0735 or less
- INNERMOST RATE: 0480 or less
- SEEK TIME: 2400 or more

#### Note

Do not turn off the power during the measurement of operation performance because the hard disk drive may be damaged.

### 3. Replacement of hard disk drive

Be sure to follow the replacement procedure when replacing the hard disk drive.

For the replacement procedure of the hard disk drive equipped with this unit, refer to Section 5 in the maintenance manual part 2 volume-1.

#### Note

Pay careful attention when handling the hard disk drive.

### 4. Initialization of hard disk drive (D3 : INSTALLATION)

Initialized using an HDD installation menu for all of the replaced hard disk drives.

#### Notes

- The HDD installation menu is automatically activated when the power is turned on after the hard disk drive has been replaced.
- All user data items (pictures and sounds) memorized in the equipped hard disk are erased when the hard disk drive is initialized.

## Section 3 Error Message

### 3-1. Overview of Error Message

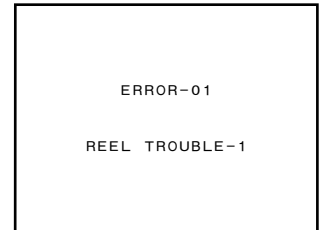
This unit has self-diagnostics function.

When trouble is detected, an ALARM indicator is lighted immediately on the lower control panel, and an error message and error code are displayed in the time data display area and event display area.

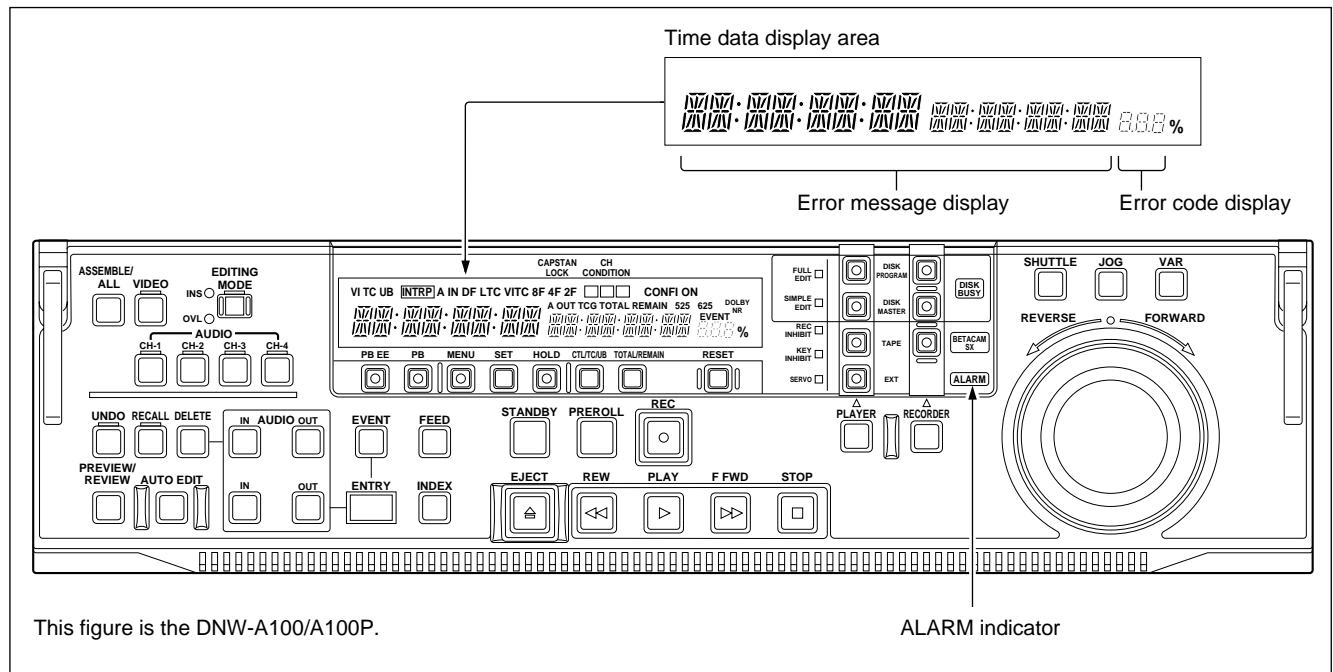
Also, an error code and error message are superimposed on the video monitor connected to the VIDEO OUTPUT COMPOSITE 3 (SUPER) connector. Furthermore, as for the some error codes, object which error occurred is displayed as sub error message on the video monitor.

#### Notes

- To superimpose the error message and code on the video monitor, the CHARACTER switch on the sub control panel must be set to ON.
- There are the error messages without error code. These messages are only displayed on the time data display area.
- The error messages with error code are memorized to NV-RAM (Non-volatile RAM) as the error logging data.  
(Refer to Section 4-4 for the error logging data.)
- The messages on the time data display area differ from the messages which are superimposed on the video monitor in some items.



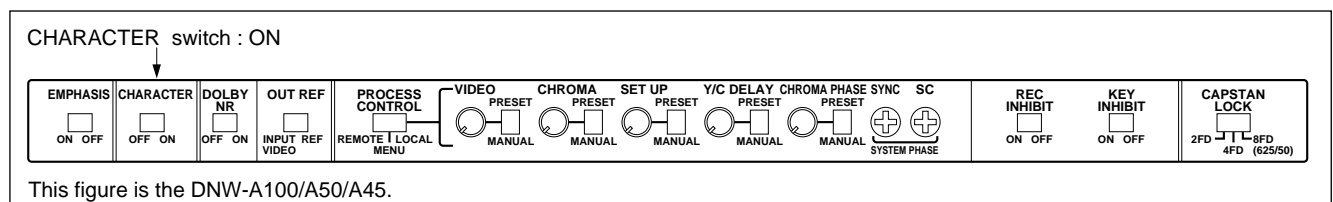
Ex. Superimposed  
on Video Monitor



This figure is the DNW-A100/A100P.

ALARM indicator

Error Message/Code Display Area and ALARM Indicator



This figure is the DNW-A100/A50/A45.

CHARACTER Switch on Sub Control Panel

Error messages are described on Section 3-2 in the order of list.

## Error List

Code	Message on time data display area	Page	Description
–	NO COMMUNICATION	3-4	Abnormality in the interface between the lower control panel (KY-364 board) and SYS1 CPU (SS-63 board) is detected in the lower control panel side.
–	WARM UP FAIL	3-4	It is detected that the warm up of the hard disk drives failed. [This error message is displayed when selecting the disk (DISK PROGRAM or DISK MASTER) as a device.]
01	REEL TROUBLE	3-5	Tape slacking is detected in the threading or unthreading operation.
02	REEL TROUBLE	3-6	Tape slacking or tape breaking is detected in the SEARCH, FF, or REW mode.
03	REEL TROUBLE	3-7	Tape slacking, tape breaking, or supply or take-up reel locking is detected in the REC or PLAY mode.
04	REEL TROUBLE	3-8	An malfunctional tape transport speed is detected in the FF or REW mode.
05	REEL TROUBLE	3-8	The malfunctional operation of the supply or take-up reel is detected during cassette insertion.
06	TAPE TENSION	3-9	Excessive tape tension is detected in the REC or PLAY mode.
07	CAPSTAN TROUBLE	3-9	Malfunction of capstan motor is detected.
08	DRUM TROUBLE	3-10	Malfunction of drum motor is detected.
09	TH/UNTH MOTOR	3-10	Malfunction of threading or unthreading operation is detected.
0A	THREADING	3-11	It is detected that the tape top processing is not completed in the threading mode.
10	HUMID	3-11	Dew condensation is detected.
11	TAPE T/E SENSOR	3-12	The tape top and tape end are detected simultaneously.
12	TAPE TOP SENSOR	3-12	Malfunction of tape top sensor is detected.
13	TAPE END SENSOR	3-13	Malfunction of tape end sensor is detected.
14	FAN MOTOR	3-14	Malfunction of cooling fan motor is detected.
20	CASS COMP MOTOR	3-15	Malfunction of cassette compartment-up or down operation is detected.
21	REEL SFT MOTOR	3-15	Malfunction of movement of the reel table corresponding to the cassette size is detected.
22	REEL POS SENSOR	3-16	The L-cassette and S-cassette positions of the reel table are detected simultaneously.
23	THRED RING SENS	3-16	The thread end and unthread end states of the threading ring are detected simultaneously.
92	INTERNAL I/F 1	3-17	Abnormality in the interface between SYS1 CPU (on SS-63 board) and other CPU/MPU is detected.
96	SY NV-RAM ERROR	3-18	The abnormal operation of an NV-RAM (on SS-63 board) for the system control system is detected.
97	SV NV-RAM	3-19	The abnormal operation of an NV-RAM (on MS-50 board) for the servo system is detected.
98	RF NV-RAM ERROR	3-19	The abnormal operation of an NV-RAM (on EQ-56, DM-89, or TBC-23 board) for the RF system is detected.
99	INTERNAL I/F 2	3-20	Abnormality in the interface between SYS2 CPU (on SS-63 board) and SERVO CPU (on SS-63 board) or MPU (on EQ-56, DM-89, TBC-23, or DIF-42 board) is detected.
D1	SSX CPU ERROR	3-21	Abnormality in CPU peripheral devices on SSX board is detected.
D2	HDD INIT ERROR	3-22	Abnormality is detected during the hard disk drive(s) initialization.
D3	SSX DIAGNOSTIC	3-24	Abnormality is detected in the diagnostic process of the SSX board at turn on the power.
D4	SSX IC ERROR	3-26	Abnormality is detected during the initialization or data transfer for SD-RAM on SSX board.
D5	FILE SYSTEM	3-27	The occurrence of abnormal state related to the file system is detected during recording/playing back the hard disk(s) or when to performing the recording/playing back the hard disk(s).
D6	SSX OP ERROR	3-28	Abnormality is detected during a record or a playback of the hard disk(s).
D7	SCSI DRIVER	3-29	Abnormality in the SCSI bus is detected.
D8	SCSI TARGET	3-30	The occurrence of medium/hardware error in hard disk drive is detected.



**Notes**

- Error codes 01 through 14 are detected in both/one of the SS-63 and/or MS-50 boards.  
Error codes 20 through 23 are detected in the MS-50 board.  
Error codes 92 through 99 are detected in the SS-63 board.  
Error codes D1 through D8 are detected in the SSX board.
- There are three error groups of error codes: VTR, DISK and OTHERS. If errors occur in multiple error groups, the error message of each group are switched at two-second intervals.  
Also, if multiple errors occur in error group, the priority level of each group display are as follows:  
VTR: 97, 02, 03, 04, 05, 07, 06, 01, 09, 08, 0A, 10, 11, 12, 13, 14, 20, 21, 22, 23  
DISK: D8, D7, D6, D5, D4, D3, D2, D1  
OTHERS: 92, 96, 98, 99

### 3-2. Details of Error Messages

**CAUTION**

The “protection mode” described in this section means the servo control system automatically stops the tape transport and drum motor rotation, and maintains this state. The DNW cannot be automatically recovered to the normal state when the DNW once enters the protection mode. Be sure to turn on the power again under the absence of the cassette tape.

If the protection mode is entered with the cassette tape inserted, take out the cassette tape manually with reference to “2-12. How to Take out the Cassette when the Tape is Slacking”. Never turn on the power again without taking out the cassette tape. This may damage the tape.

**Note**

The messages on the time data display area differ from the messages which are superimposed on the video monitor in some items. In this section, each message indicates as following example.

---

**Ex. : ERROR-23 THREADING RING POSITION ERROR  
(THRED RING SENS)**

↑  
Message on time data display area

↑  
Message superimposed on video monitor

---

**(NO COMMUNICATION)**

Description:	<p>Abnormality in the interface between the lower control panel's MPU (on the KY-364 board) and SYS1 CPU (SS-63 board) was detected.</p> <div style="border: 1px solid black; padding: 2px; width: fit-content;"><b>Note</b></div> <p>This error message is only displayed on the time data display area in that the abnormality of the interface is detected in the lower control panel side.</p>
Detecting condition:	When the lower control panel's MPU (IC104 on KY-364 board) is received no interface signal from SYS1 CPU (IC704 on SS-63 board) for more than two seconds.
Possible causes:	<ul style="list-style-type: none"> <li>• Cable connection defect or disconnection</li> <li>• Line receiver/transceiver (IC102 on KY-364 board) trouble</li> <li>• SIO (IC1102 on SS-63 board) trouble</li> </ul>
Protecting operation:	None

---

**(WARM UP FAIL)**

Descriptions:	<p>The warm up of the hard disk drives failed.</p> <div style="border: 1px solid black; padding: 2px; width: fit-content;"><b>Note</b></div> <p>This error message is displayed when selecting the disk (DISK PROGRAM or DISK MASTER) as a device.</p>
Detecting conditions:	<ol style="list-style-type: none"> <li>1) When the temperature information from the temperature sensing circuit is below 5°C/41°F) under the hard disk drive warming up function operates 30 minuets or more due to cold conditions.</li> <li>2 ) When the temperature information from the temperature sensing circuit or the heat-up circuit is not normal.</li> </ol>
Possible causes:	<ul style="list-style-type: none"> <li>• Ambient temperature of the unit may be too low (below –10°C/14°F)</li> </ul> <div style="border: 1px solid black; padding: 2px; width: fit-content;"><b>Note</b></div> <p>When the ambient temperature of the unit may be too low (below –10°C/ 14°F), turn off the unit's power, warm up the surroundings (beware of the moisture condensation) before turning on the power again. Because the hard disk drive temperature dose not reach 5°C/41°F or more, even if a hard disk drive warming up function operates.</p> <ul style="list-style-type: none"> <li>• Harness (to be connected SE-378 board) trouble or disconnection</li> <li>• Temperature sensing circuit (on SE-378 board) trouble</li> <li>• Heat-up circuit (on SE-378 board) trouble</li> <li>• SS-63 board (IC100, 101, 500, 1101, 1104, 1107, 1401, etc.) trouble</li> </ul>
Protecting operation:	Disables the start of the head disk drives.

### Hard disk drive warming up function

If the hard disk drive is started up under cold conditions (below 5°C/41°F), its reliability may be severely reduced.

This unit includes a function to inhibit starting of the hard disk drive when the temperature is below 5°C/41°F. At the same time, to warm up the hard disk drives, a hard disk drive warming up function operates. During this interval, the DISK BUSY indicator on the lower control panel blinks slowly. In this state, selecting the disk (DISK PROGRAM or DISK MASTER) as a device appears message “HDD WARM UP” on the time data display area. When the hard disk drive temperature reaches 5°C/41°F or more, this message disappears, and the hard disk drive can now be started.

#### Note

If message “HDD WARM UP” keeps displaying on the time data display area under the ambient temperature of the unit may not be so low, following troubles are supposed.

- Temperature sensing circuit (on SE-378 board) trouble
- SS-63 board trouble

---

## ERROR-01 REEL TROUBLE - 1 (REEL TROUBLE)

Description: Tape slacking was detected during threading or unthreading.

Detecting conditions: 1) When no take-up reel FG can be detected in the unthread operation just after activation.  
2) When the relation between the take-up reel FG and threading FG is out of the specification in operations other than unthread just after activation.

Sub error message: None

Possible causes:

- Cassette compartment trouble or installation defect
  - \* The reel did not rotate because the cassette was lifted-up from the specified position.
- Clearance adjustment defect of take-up reel FG detection block
- Take-up reel FG waveform shaper circuit (MS-50 board) trouble
- Take-up reel motor trouble
- Take-up reel motor drive circuit (DR-315 board) trouble
- Take-up reel brake trouble
- Take-up reel brake solenoid drive circuit (MS-50 board) trouble
- Servo adjustment defect on take-up reel
- Harness disconnection
- Take-up reel table height adjustment defect

Protecting operation: Enters the protection mode.

#### CAUTION

Be sure to take out the cassette manually (refer to Section 2-12). Do not turn the power on again without taking out the cassette. This may damage the tape.

---

## ERROR-02 REEL TROUBLE - 2 (REEL TROUBLE)

Description:	Tape slacking or tape breaking was detected in SEARCH, FF, or REW mode.
Detecting conditions:	<ol style="list-style-type: none"> <li>1) When the take-up value is lower than the specified value with respect to the tape supply value.</li> <li>2) When the relation among the capstan FG, supply reel FG, and take-up reel FG are out of the specification.</li> <li>3) When the supply reel and take-up reel do not coincide in rotation direction continuously for more than five seconds.</li> </ol>
Sub error message:	None
Possible causes:	<ul style="list-style-type: none"> <li>• Cassette compartment trouble or installation defect <ul style="list-style-type: none"> <li>※ The reel did not rotate because the cassette was lifted-up from the specified position.</li> </ul> </li> <li>• Clearance adjustment defect of supply or take-up reel FG detection block</li> <li>• Supply or take-up reel FG waveform shaper circuit (MS-50 board) trouble</li> <li>• Supply or take-up reel motor trouble</li> <li>• Supply or take-up reel motor drive circuit (DR-315 board) trouble</li> <li>• Capstan motor trouble</li> <li>• Capstan motor drive circuit (DR-315 board) trouble</li> <li>• Capstan FG waveform shaper circuit (MS-50 board) trouble</li> <li>• Take-up torque insufficiency during REW due to supply tension sensor or supply tension detect circuit (MS-50 board) trouble</li> <li>• Servo adjustment defect on capstan, reel(s), and supply tension sensor</li> <li>• Supply or take-up reel brake trouble</li> <li>• Supply or take-up reel brake solenoid drive circuit (MS-50 board) trouble</li> <li>• Harness disconnection</li> <li>• Reel table height adjustment defect</li> <li>• Tape path and drum troubles</li> <li>• Tape abnormality (The winding state has a problem.)</li> </ul>
Protecting operation:	<p>Enters the protection mode. The normal state may be returned after the protection mode is entered at the end of the tape.</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;"><b>CAUTION</b></div> <p>Be sure to take out the cassette manually (refer to Section 2-12). Do not turn on the power again without taking out the cassette. This may damage the tape.</p>

---

## ERROR-03 REEL TROUBLE - 3 (REEL TROUBLE)

Description:	Tape slacking, tape breaking, or supply or take-up reel locking was detected in the REC or PLAY mode.
Detecting conditions:	<ol style="list-style-type: none"> <li>1) When the take-up value is lower than the specified value with respect to the tape supply value.</li> <li>2) When the relation among the capstan FG, supply reel FG, and take-up reel FG are out of the specification.</li> <li>3) When the supply reel and take-up reel do not coincide in rotation direction continuously for more than five seconds.</li> <li>4) When the tension value calculated from the supply tension sensor output is less than 15 g continuously for more than three seconds.</li> </ol>
Sub error message:	None
Possible causes:	<ul style="list-style-type: none"> <li>• Cassette compartment trouble or installation defect <ul style="list-style-type: none"> <li>* The reel did not rotate because the cassette was lifted-up from the specified position.</li> </ul> </li> <li>• Clearance adjustment defect of supply or take-up reel FG detection block</li> <li>• Supply or take-up reel FG waveform shaper circuit (MS-50 board) trouble</li> <li>• Supply or take-up reel motor trouble</li> <li>• Supply or take-up reel motor drive circuit (DR-315 board) trouble</li> <li>• Capstan motor trouble</li> <li>• Capstan motor drive circuit (DR-315 board) trouble</li> <li>• Capstan FG waveform shaper circuit (MS-50 board) trouble</li> <li>• Servo adjustment defect on capstan, reel(s), and supply tension sensor</li> <li>• Supply or take-up reel brake trouble</li> <li>• Supply or take-up reel brake solenoid drive circuit (MS-50 board) trouble</li> <li>• Harness disconnection</li> <li>• Reel table height adjustment defect</li> <li>• Tape path and drum troubles</li> <li>• Tape abnormality (The winding state has a problem.)</li> </ul>
Protecting operation:	<p>Enters the protection mode.</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;"><b>CAUTION</b></div> <p>Be sure to take out the cassette manually (refer to Section 2-12). Do not turn on the power again without taking out the cassette. This may damage the tape.</p>

---

**ERROR-04 REEL TROUBLE - 4**  
**(REEL TROUBLE)**

Description:	Abnormal tape transport speed was detected in the FF or REW mode.
Detecting condition:	When the tape speed calculated from the supply reel FG and take-up reel FG is under a half of the specified tape speed continuously for more than four seconds.
Sub error message:	None
Possible causes:	<ul style="list-style-type: none"> <li>• Cassette compartment trouble or installation defect           <ul style="list-style-type: none"> <li>* The reel did not rotate because the cassette was lifted-up from the specified position.</li> </ul> </li> <li>• Clearance adjustment defect of supply or take-up reel FG detection block</li> <li>• Supply or take-up reel motor trouble</li> <li>• Supply or take-up reel FG waveform shaper circuit (MS-50 board) trouble</li> <li>• Supply or take-up reel motor drive circuit (DR-315 board) trouble</li> <li>• Servo adjustment defect on supply or take-up reel</li> <li>• Supply or take-up reel brake trouble</li> <li>• Supply or take-up reel brake solenoid drive circuit (MS-50 board) trouble</li> <li>• Harness disconnection</li> <li>• Reel table height adjustment defect</li> <li>• Tape path and drum troubles</li> <li>• Tape abnormality (The winding state has a problem.)</li> </ul>
Protecting operation:	Stops the tape transport and enters the rest state.

---

**ERROR-05 REEL TROUBLE - 5**  
**(REEL TROUBLE)**

Description:	Abnormal supply reel or take-up reel operation was detected in a diagnosis during cassette insertion.
Detecting conditions:	<ol style="list-style-type: none"> <li>1) When the supply reel FG or take-up reel FG count is less than the specified value with the reel rotated.</li> <li>2) When the supply reel FG or take-up reel FG count is more than the specified value with the reel stopped.</li> </ol>
Sub error message:	None
Possible causes:	<ul style="list-style-type: none"> <li>• Supply or take-up reel FG sensor (SE-344 board) trouble or clearance adjustment defect</li> <li>• Supply or take-up reel FG waveform shaper circuit (MS-50 board) trouble</li> <li>• Supply or take-up reel motor drive circuit (DR-315 board) trouble</li> <li>• Servo adjustment defect on supply or take-up reel</li> <li>• Supply or take-up reel brake trouble</li> <li>• Supply or take-up reel brake solenoid drive circuit (MS-50 board) trouble</li> <li>• Harness disconnection</li> </ul>
Protecting operation:	Ejects the cassette.

---

## **ERROR-06 TAPE TENSION ERROR (TAPE TENSION)**

Description:	Excessive tension was detected in the REC or PLAY mode.
Detecting condition:	When the tension value calculated from supply tension sensor output is more than 55 g continuously for more than three seconds.
Sub error message:	None
Possible causes:	<ul style="list-style-type: none"> <li>• Cassette compartment trouble or installation defect           <ul style="list-style-type: none"> <li>* The reel did not rotate because the cassette was lifted-up from the specified position.</li> </ul> </li> <li>• Supply tension sensor or its related circuit (MS-50 board) trouble</li> <li>• Supply reel motor trouble</li> <li>• Supply reel motor drive circuit (DR-315 board) trouble</li> <li>• Servo adjustment defect on supply reel and supply tension sensor</li> <li>• Supply reel brake trouble</li> <li>• Supply reel brake solenoid drive circuit (MS-50 board) trouble</li> <li>• Harness disconnection</li> </ul>
Protecting operation:	Stops the tape transport and enters the rest state.

---

## **ERROR-07 CAPSTAN TROUBLE (CAPSTAN TROUBLE)**

Description:	Malfunction of capstan motor was detected.
Detecting conditions:	<ol style="list-style-type: none"> <li>1) When the capstan FG count is less than the specified value in a diagnosis during cassette insertion.</li> <li>2) When the frequency calculated from the capstan FG is out of the specification in the REC, PLAY, or SEARCH mode.</li> <li>3) When CAPSTAN FG(A) NOR signal and CAPSTAN FG(B) NOR signal interruption are not normal for about 40 ms in the REC or PLAY mode.</li> </ol>
Sub error message:	None
Possible causes:	<ul style="list-style-type: none"> <li>• Capstan motor trouble</li> <li>• FG sensor trouble in capstan motor</li> <li>• Capstan motor drive circuit (DR-315 board) trouble</li> <li>• Capstan motor FG waveform shaper circuit (MS-50 board) trouble</li> <li>• Capstan FG duty adjustment defect</li> </ul>
Protecting operations:	<p>Ejects the cassette for No. 1 in detecting conditions.</p> <p>Stops the tape transport and enters the rest state for No. 2 and No. 3 in detecting conditions.</p>

---

## **ERROR-08 DRUM TROUBLE (DRUM TROUBLE)**

Description:	Malfunction of drum motor was detected.
Detecting condition:	When the drum FG cycle is shifted more than about $\pm 30\%$ continuously for more than 10 seconds as compared with during normal rotation.
Sub error message:	None
Possible causes:	<ul style="list-style-type: none"> <li>• Drum motor trouble</li> <li>• Drum microcomputer (IC314 on SS-63 board) trouble</li> <li>• Drum motor drive circuit (DR-315 board) trouble</li> <li>• Drum FG/PG waveform shaper circuit (DR-315 board) trouble</li> <li>• Assembly defect during upper drum replacement</li> </ul>
Protecting operation:	Stops the tape transport and enters the rest state in the unthread end state.

---

## **ERROR-09 TH/UNTH MOTOR TIMEOUT (TH/UNTH MOTOR)**

Description:	Malfunction of threading or unthreading operation was detected.
Detecting conditions:	<ol style="list-style-type: none"> <li>1) When no operation is completed within about six seconds after operation start.</li> <li>2) When no threading FG is output within about 0.4 second during threading motor drive.</li> <li>3) When states other than unthread end are continued for more than six seconds in case that the unit should be in the unthread end state.</li> </ol>
Sub error message:	None
Possible causes:	<ul style="list-style-type: none"> <li>• Unthread end sensor (TR-79 board) trouble</li> <li>• Thread end sensor (TR-79 board) trouble</li> <li>• Thread end/unthread end input port (IC1 on MS-50 board) trouble</li> <li>• Threading motor trouble</li> <li>• Threading FG sensor (PTC-54 board) trouble</li> <li>• Threading FG waveform shaper circuit (MS-50 board) trouble</li> <li>• Threading motor drive circuit (DR-315 board) trouble</li> <li>• Threading mechanism trouble</li> </ul>
Protecting operations:	<p>Ejects the cassette during cassette insertion or ejection.</p> <p>Enters the protection mode during tape threading/unthreading.</p> <p>Stops the tape transport and enters the rest state in cases except the above.</p>



---

## **ERROR-0A THREADING TROUBLE (THREADING)**

Description: It was detected that the tape top processing in the thread state is not completed.

Detecting condition: When the tape top is detected again after it is processed.

### **Tape top processing**

In this processing, the tape is slightly forwarded without taking out the tape after unthread because the tape top was detected during threading.

(Short FF)

Sub error message: None

Possible causes:

- Take-up reel motor trouble
- Servo adjustment defect on take-up reel
- Take-up reel motor drive circuit (DR-315 board) trouble
- Tape top sensor trouble
- Tape top detection circuit (MS-50 board) trouble
- Tape top input port (IC115 on SS-63 board) trouble
- Tape abnormality

Protecting operation: Enters the rest state in the unthread end state.

---

## **ERROR-10 HUMID (HUMID)**

Description: Dew condensation was detected.

Detecting condition: When the condensation sensor detects dew condensation continuously for about two seconds.

Sub error message: None

Possible causes:

- Actual dew detection (When the operating environment rapidly changes from low temperature to high temperature and high humidity)
- Condensation sensor trouble
- Dew input port (IC1 on MS-50 board) trouble

Protecting operations:

- Prohibits the cleaning roller operation.
- Stops the tape transport and enters the rest state in the unthread end state when the tape is threaded in states other than PLAY and REC mode.
- Prohibits the tape threading.
- Prohibits the cassette insertion.

---

## **ERROR-11 TAPE TOP/END SENSOR TROUBLE (TAPE T/E SENSOR)**

Description:	The tape top and tape end were detected simultaneously.
Detectiong condition:	When the simultaneous detection of the tape end and tape top is continued for more than seven seconds.
Sub error message:	None
Possible causes:	<ul style="list-style-type: none"> <li>• Tape top sensor or tape end sensor trouble</li> <li>• Tape top or tape end detection circuit (MS-50 board) trouble</li> <li>• Tape top/tape end input port (IC115 on SS-63 board) trouble</li> <li>• Harness disconnection</li> </ul>
Protecting operation:	Stops the tape transport and enters the rest state during tape transport.

---

## **ERROR-12 TAPE TOP SENSOR TROUBLE (TAPE TOP SENSOR)**

Description:	Malfunction of tape top sensor was detected.
Detecting condition:	When the tape top is detected continuously for more than seven seconds.
Sub error message:	None
Possible causes:	<ul style="list-style-type: none"> <li>• Tape top sensor trouble</li> <li>• Tape top detection circuit (MS-50 board) trouble</li> <li>• Tape top input port (IC115 on SS-63 board) trouble</li> <li>• Harness disconnection</li> <li>• The tape cannot move at the tape top due to troubles other than the tape sensor.</li> </ul>
Protecting operations:	<p>In the FF mode, continues the operation until the tape end is detected. Stops the tape transport and enters the rest state when the tape end is detected.</p> <p>During tape transport in forward direction, the FF mode can be entered only while the total tape quantity is observed.</p> <p>Stops the tape transport and enters the rest state during tape transport except the above.</p>

---

**ERROR-13 TAPE END SENSOR TROUBLE  
(TAPE END SENSOR)**

Description:	Malfunction of tape end sensor was detected.
Detecting condition:	When the tape end is detected continuously for more than seven seconds.
Sub error message:	None
Possible causes:	<ul style="list-style-type: none"><li>• Tape end sensor trouble</li><li>• Tape end detection circuit (MS-50 board) trouble</li><li>• Tape end input port (IC115 on SS-63 board) trouble</li><li>• Harness disconnection</li><li>• The tape cannot move at the tape end due to troubles other than the tape sensor.</li></ul>
Protecting operations:	<p>In the REW mode, continues the operation until the tape top is detected. Stops the tape transport and enters the rest state when the tape top is detected.</p> <p>During the tape transport in reverse direction, the REW mode can be entered only while the total tape quantity is observed.</p> <p>Stops the tape transport and enters the rest state during tape transport except the above.</p>

## ERROR-14 FAN MOTOR TROUBLE (FAN MOTOR)

Description: Malfunction of cooling fan motor was detected.

### CAUTION

If this error occurred, stop immediately operation of the unit, and turn off the power.

If the unit uses continuously under the fan is stopped state, overheating inside the unit can cause a fire or a failure.

Detecting condition: When the fan motor FG frequency is less than the specified value continuously for more than one second.

Sub error message: None

Possible causes:

- Fan motor trouble
- Fan motor FG input port (IC115 or IC500 on SS-63 board) trouble
- Fan motor control port (IC500 on SS-63 board) trouble
- Fan motor power switch circuit (MB-648 board) trouble

Protecting operation: None

### Note

This unit has four fan motors.

When the above detecting condition is satisfied by any fan motor, this error occurs.

Relations of fan motors and operation state, ports, power switch circuit are as follows.

Use	Operation state	FG input port	Control port	Power switch circuit
For rear	Always rotating	IC500/SS-63 board	None	None
For HDD units	Pauses at under 5°C/40°F	IC500/SS-63 board	IC500/SS-63 board	Q4 and Q5/MB-648 board
For mechanical deck	Always rotating	IC115/SS-63 board	IC500/SS-63 board	Q1 and Q2/MB-648 board
For power supply unit	Always rotating	IC115/SS-63 board	None	None

---

### **ERROR-20 CASSETTE COMPARTMENT MOTOR LOCK (CASS COMP MOTOR)**

Description:	Malfunction of cassette compartment-up or down operation was detected.
Detecting condition:	When no operation is completed within about six seconds after operation start.
Sub error message:	None
Possible causes:	<ul style="list-style-type: none"> <li>• Cassette compartment block trouble</li> <li>• Cassette compartment motor drive circuit (DR-315 board) trouble</li> <li>• Cassette-down sensor (CL-29 board) trouble</li> <li>• Cassette-down input port (IC1 on MS-50 board) trouble</li> </ul>
Protecting operation:	Stops the movement of the cassette compartment and reel table until a cassette eject button is pushed.

---

### **ERROR-21 REEL SHIFT MOTOR LOCK (REEL SFT MOTOR)**

Description:	Malfunction of movement of the reel table corresponding to the cassette size was detected.
Detecting condition:	When no operation is completed within about six seconds after operation start.
Sub error message:	None
Possible causes:	<ul style="list-style-type: none"> <li>• Reel shift mechanism trouble</li> <li>• Reel shift motor trouble</li> <li>• Reel shift motor drive circuit (DR-315 board) trouble</li> <li>• Reel position sensor (PTC-71 board) trouble (S position sensor or L position sensor)</li> <li>• Reel position input port (IC1 on MS-50 board) trouble</li> </ul>
Protecting operation:	Stops the movement of the reel table and ejects the cassette during cassette loading.

---

## **ERROR-22 REEL POSITION SENSOR TROUBLE (REEL POS SENSOR)**

Description:	The L and S cassette positions of the reel table were detected simultaneously.
Detecting condition:	When the L and S position sensors detect the L and S cassette positions, respectively at the same time.
Sub error message:	None
Possible causes:	<ul style="list-style-type: none"> <li>• S position sensor (PTC-71 board) trouble</li> <li>• L position sensor (PTC-71 board) trouble</li> <li>• Reel position input port (IC1 on MS-50 board) trouble</li> </ul>
Protecting operation:	If possible, ejects the cassette, when an error occurs during cassette insertion. Prohibits the cassette insertion.

---

## **ERROR-23 THREADING RING POSITION ERROR (THRED RING SENS)**

Description:	The thread end and unthread end states were detected simultaneously.
Detecting condition:	When the thread end and unthread end sensors detect the thread end and unthread end states, respectively at the same time.
Sub error message:	None
Possible causes:	<ul style="list-style-type: none"> <li>• Thread end sensor (TR-79 board) trouble</li> <li>• Unthread end sensor (TR-79 board) trouble</li> <li>• Thread end or unthread end input port (IC1 on MS-50 board) trouble</li> </ul>
Protecting operations:	Ejects the cassette during cassette insertion or ejection. Enters the protection mode during tape threading/unthreading. Stops the tape transport and enters the rest state in cases except the above.

---

## ERROR-92 INTERNAL INTERFACE ERROR 1 (INTERNAL I/F 1)

**Description:** Abnormality was detected in the communication between SYS1 CPU (IC704 on SS-63 board) and other CPU/MPU.

**Sub error messages and Detecting conditions:**

**SY2:** When the SYS2 CPU (IC1505 on SS-63 board) initialization at power-on is in abnormal state.

**SSX:** When the communication with SSX board's CPU (IC204) is in abnormal state.

**KY:** When the communication with KY-364 board's MPU (IC104) is in abnormal state.

**FP:** When the communication with FP-91 board's MPU (IC6) is in abnormal state.

**FL:** When the communication with level meter module's CPU is in abnormal state.

**Possible causes:**

- SY2:**
- DIP switch (S1900 on SS-63 board) setting defect
  - Common RAM (IC2501 on SS-63 board) or Common RAM controller (IC2500 on SS-63 board) trouble
  - System control system SY-2 area (IC1500 series on SS-63 board) trouble
- SSX:**
- DIP switch (S300 on SSX board) setting defect
  - Dual port RAM (IC302 on SSX board) trouble
  - Bus buffers (IC1403 through 1405 on SS-63 board) trouble
- KY:**
- Cable (between MB-648 board and KY-364 board) connection defect or disconnection
  - Interface circuit (IC1102 through 1105 on SS-63 board) trouble
  - Line receiver/transceiver (IC102 on KY-364 board) trouble
  - KY-364 board's MPU (IC104) trouble
- FP:**
- Cable (between MB-648 board and FP-91 board) connection defect or disconnection
  - MPU control interface circuit (IC1400 through 1402 on SS-63 board) trouble
  - FP-91 board's MPU (IC6) trouble
- FL:**
- Cable (between FP-91 board and level meter module) connection defect or disconnection
  - Level meter module trouble

**Protecting operations:** When the sub error message is "**SY2**", enters the protection mode.  
When it is except above, displays only this error.

---

**ERROR-96 SY NV-RAM ERROR**  
**(SY NV-RAM ERROR)**

**Description:** The abnormal operation of an NV-RAM (IC710 on SS-63 board) for the system control system was detected.

**Sub error messages and Detecting conditions:**

- CURRENT SETUP:** When the data error occurs in the setup menu current memory area during the data write or read .
- SETUP BANK1:** When the data error occurs in the setup menu bank 1 memory area during the data write or read.
- SETUP BANK2:** When the data error occurs in the setup menu bank 2 memory area during the data write or read.
- SETUP BANK3:** When the data error occurs in the setup menu bank 3 memory area during the data write or read.
- SETUP BANK4:** When the data error occurs in the setup menu bank 4 memory area during the data write or read.
- ID CODE:** When the data error occurs in the ID code memory area during the data write or read.
- CALENDAR CLOCK:** When the calendar/clock function was stopped.

**Possible causes:**

- NV-RAM (IC710 on SS-63 board) trouble
- Address decoder (IC1107 on SS-63 board) trouble
- Backup battery inside NV-RAM is out of life

**Protecting operations:** When the error occurs in setting data of the setup menu, resets those data to the factory settings.  
 When the error occurs in ID data, resets the data to 00 00 00 00.  
 When the error occurs at the calendar/clock function, resets the date and time data to '96 11 01 00 00 00 (= Year, Month, Day, Hour, Minute, Second).



---

**ERROR-97 SV NV-RAM ERROR  
(SV NV-RAM)**

Description:	The abnormal operation of an NV-RAM (MS-50 board) for the servo system was detected.
Detecting condition:	When the checksum of NV-RAM data does not coincide during activation.
Sub error message:	None
Possible cause:	NV-RAM (IC9 on MS-50 board) trouble
Protecting operation:	Enters the protection mode.

---

**ERROR-98 RF NV-RAM ERROR  
(RF NV-RAM ERROR)**

Description:	The abnormal operation of an NV-RAM (EQ-56, DM-89, or TBC-23 board) for RF system was detected.
Sub error messages and Detecting conditions:	<p><b>EQ:</b> When the error occurs in an NV-RAM (IC900 on EQ-56 board) during the data write or read.</p> <p><b>DM:</b> When the error occurs in an NV-RAM (IC908 on DM-89 board) during the data write or read.</p> <p><b>TBC:</b> When the error occurs in an NV-RAM (IC200 on TBC-23 board) during the data write or read.</p>
Possible causes:	Trouble of an NV-RAM indicated by sub error message
Protecting operation:	None

---

## ERROR-99 INTERNAL INTERFACE ERROR 2 (INTERNAL I/F 2)

**Description:** Abnormality was detected in the communication between SYS2 CPU (SS-63 board) and SERVO CPU (SS-63 board) or MPU (on EQ-56, DM-89, TBC-23, or DIF-42 board).

**Sub error messages and Detecting conditions:**

- SV:** When the SERVO CPU (IC103 on SS-63 board) initialization at power-on is in abnormal state.
- EQ:** When the communication with EQ-56 board's MPU (IC908) is in abnormal state.
- DM:** When the communication with DM-89 board's MPU (IC906) is in abnormal state.
- TBC:** When the communication with TBC-23 board's MPU (IC202) is in abnormal state.
- DIF:** When the communication with DIF-42 board's MPU (IC313) is in abnormal state.

- Possible causes:**
- SV:**
    - DIP switch (S101 on SS-63 board) setting defect
    - Common RAM (IC2502 on SS-63 board) or Common RAM controller (IC2503 on SS-63 board) trouble
    - Servo system (IC100 series or IC300 series on SS-63 board) trouble
  - EQ:**
    - MPU control interface circuit (IC2102, 2107, 2108 on SS-63 board) trouble
    - Interface buffers (IC901, 902, 905 on EQ-56 board) trouble
    - EQ-56 board's MPU (IC908) trouble
  - DM:**
    - MPU control interface circuit (IC2102, 2107, 2108 on SS-63 board) trouble
    - DM-89 board's MPU (IC906) trouble
  - TBC:**
    - MPU control interface circuit (IC2102, 2107, 2108 on SS-63 board) trouble
    - TBC-23 board's MPU (IC202) trouble
  - DIF:**
    - MPU control interface circuit (IC2102, 2107, 2108 on SS-63 board) trouble
    - DIF-42 board's MPU (IC313) trouble

**Protecting operations:** When the sub error message is "**SV**", enters the protection mode.  
When it is except above, displays only this error.

---

## ERROR-D1 SSX CPU PERIPHERAL ERROR (SSX CPU ERROR)

Description: Abnormality in CPU peripheral devices on SSX board is detected.

Sub error messages and Detecting conditions:

### **FLASH Write Fail(11):**

During the data transmission from S-RAM to the flash memory, when the time-out is detected within the flash memory or when the data write is not completed within a regulation time (about 30 seconds).

### **SRAM Init Fail(12):**

When the writing data and reading data to/from S-RAM 2 is not equal.

### **DP-RAM Init Fail(13):**

When the writing data and reading data to/from the dual port RAM is not equal.

### **V\_INT Task Time Over(14):** (Refer to **Supp. remarks.**)

When the V\_INT task process is time-out (a regulation time: 8 ms).

Possible causes:

### **FLASH Write Fail(11):**

- Flash memory (IC212 on SSX board) trouble or not mounted
- IC socket (for the flash memory) trouble (poor contact)

### **SRAM Init Fail(12):**

Some S-RAM trouble within S-RAM2 (IC217 through 220 on SSX board)

### **DP-RAM Init Fail(13):**

- Dual port RAM (IC302 on SSX board) trouble
- Fails the communication with SYS1 CPU (SS-63 board)

### **V\_INT Task Time Over(14):** Refer to **Supp. remarks.**

Protecting operation: Disables the access to the hard disk drive.

### **Note**

All operations can not be performed concerning the hard disk drives.

## **Supp. remarks**

For the sub error message “**V\_INT Task Time Over(14)**”, the error message of error code D1 is not displayed in the time data display area on the lower control panel and it is not superimposed on the video monitor. However, stores as the error logging data.

“**V\_INT Task Time Over(14)**” arises if the followings should occur.

- The asynchronous interruptions from SCSI bus etc. were concentrated on a task.
- Jobs of the file search etc. (that take much time to execute) were concentrated on a task.

---

## ERROR-D2 HDD INITIALIZATION ERROR (HDD INIT ERROR)

Description: Abnormality is detected during the hard disk drives (HDDs) initialization.

Sub error messages and Detecting conditions:

**HDD Not Connected(21):**

When no response is transmitted from the HDD with respect to the INQUIRY command to each HDD.

**HDD Not Supported(22):**

When the responded data is the unsupported device information that transmitted from the HDD with respect to the INQUIRY command to each HDD.

**HDD Unformatted(23):**

When a sector capacities is except 4096-byte format.

**HDD Illegal Format(24):**

File system's data of HDD is not normal.

**HDD Incorrect Jumper(25):**

When the jumper settings of HDD is not equal to specified settings.

**HDD Start Time Over(26):**

When the start of HDD is not completed within 2 minutes or when the check condition error occurs during the SCSI bus initialization.

**Wrong Zone (27):** (SSX ROM version 3.10 and later)

1. When the zone size stored in the memory of this unit is not coincide with that of the connected BKNW-116. (Version 3.10 and later)
2. When the desired zone size does not coincide with the current zone size of BKNW-116 in changing from INTERNAL to EXT. (Version 3.20 and later)

Possible causes:

**HDD Not Connected(21):**

- HDD is not installed.
- Illegal setting of HDD's SCSI ID
- Cable or harness (to be connected HDD) trouble or disconnection
- HDD trouble

**HDD Not Supported(22):** (Refer to No. 1 of **Supp. remarks.**)

Connection of unsupported HDD

**HDD Unformatted(23):** (Refer to No. 1 of **Supp. remarks.**)

Connection of the extra-specified format HDD

**HDD Illegal Format(24):** (Refer to No. 2 of **Supp. remarks.**)

Connection of HDD with unformatted of the file system data

**HDD Incorrect Jumper(25):** (Refer to No. 3 of **Supp. remarks.**)

Connection of HDD with incorrect jumper settings

**HDD Start Time Over(26):**

HDD trouble

**Wrong Zone (27):**

1. Connected another BKNW-116 to this unit.  
(Refer to No. 4 of **Supp. remarks.**)
2. Entailed a change in the zone size of BKNW-116 when changing the zone from INTERNAL to EXT.  
(Refer to No. 5 of **Supp. remarks.**)

### Protecting operations: **HDD Illegal Format(24):**

After the following step automatically performs according to the occurring state of abnormal Cautomatically enters D3 : INSTALLATION (hard disk installation menu) of the maintenance mode.

- Copies the file system's data to the abnormal HDD from the normal HDD when the abnormality was found in one of a pair.
- Perform the logical format for HDDs when the abnormalities were found in both HDDs of a pair.

#### **Notes**

- When D3 : INSTALLATION (hard disk installation menu) of the maintenance mode enters, be sure to perform the step according to instruction of its menu.
- Paired SCSI IDs: ID0 and ID1 (HDDs of this unit)  
ID2 and ID3 }  
ID4 and ID5 } (HDDs of the BKNW-116)  
ID6 and ID7 }  
ID8 and ID9 }

### **Wrong Zone (27):**

When the abnormality is found, a menu for changing the zone automatically appears.

Except above sub error message:

Disables the access to the hard disk drive.

#### **Note**

All operations can not be performed concerning the hard disk drives.

### **Supp. remarks**

1. Generally, the sub error messages "**HDD Not Supported(22)**" and "**HDD Unformatted(23)**" are not occurred. Those errors may occurs in case of that unspecified HDD as repair parts is installed. In this case, require replacing to the specified HDD.
2. If the specified steps are not performed after replacing the HDD, the error code D2 by the sub error message "**HDD Illegal Format(24)**" is displayed.
3. If the jumpers except SCSI ID are changed, the error code D2 by the sub error message "**HDD Incorrect Jumper(25)**" may be displayed. Do not change carelessly the settings of the jumpers except SCSI ID.

For the settings of internal HDD's jumpers, refer to the maintenance manual part 2, volume-1.

4. The sub error message "**Wrong Zone (27)**" appears when the BKNW-116 connected to this unit, such as FULL zone, is disconnected and another BKNW-116, such as HALF-1 zone, is connected instead.
5. In this unit, the zone size of BKNW-116 is examined when changing the zone from INTERNAL to EXT.

# mark(s) indicating the zone size based on the examination result and a message "!!! ZONE MISMATCH !!!" are displayed when the examination result does not coincides with the specified zone size.

The zone size can be changed after the message "!!! ZONE MISMATCH !!!" is displayed.

---

**ERROR-D3      SSX DIAGNOSTIC ERROR  
(SSX DIAGNOSTIC)**

Description:                      Abnormality is detected in the diagnostic process of the SSX board at power-on.

Sub error messages and Detecting conditions:

**DIAG Data Not In(31):**

When the transfer completing flag is not set to the memory store register of SSX IC (IC800 on SSX board) during transfer the test data to SD-RAM from Diag FIFO on the SSX board. (Failed in test data transfer.)

**RxCMD Incorrect(32):**

When the CMD data does not coincide with the test data which is written to Rx CMD FIFO (IC606 on SSX board) in the reading data.

**RxTC Data Incorrect(33):**

When the TC data does not coincide with the test data which is written to Rx TC FIFO (IC613 on SSX board) in the reading data.

**Wr DMA Fail(34):**

When command end status indicates unusual state after writing the diagnostic data to the hard disk drives. (Failed in diagnostic data writing.)

**Rd Data Incorrect(35):**

When the reading data does not coincide with the diagnostic data which is written to the hard disk drives.

**Rd DMA Fail(36):**

When command end status indicates unusual state after reading the diagnostic data from the hard disk drives. (Failed in diagnostic data reading.)

**HDD Data Not In(37):**

When the transfer completing flag is not set to the memory store register of SSX IC (IC800 on SSX board) during transfer the test data to SD-RAM on the SSX board from the hard disk drives. (Failed in test data transfer.)

**TxTC Data Incorrect(38):**

When the reading data does not coincide with the test data which is written to Tx TC FIFO (IC702 on SSX board).

Possible causes:

**DIAG Data Not In(31):**

- SSX board's 27M reference clock (IN CLK 2, 3) lines trouble
- SSX board's 27M reference clock (REF CLK 1) line trouble
- SSX board's 27M reference clock (CLK27) line trouble
- SSX board's 54M reference clock (CLK54) line trouble
- DIAG FIFO (IC604, 605 on SSX board) trouble
- DIAG FIFO control signals abnormal

**RxCMD Incorrect(32):**

- SSX board's 27M reference clock (IN CLK 2) line trouble
- Rx CMD FIFO (IC606 on SSX board) trouble
- Rx CMD FIFO control signals abnormal

**RxTC Data Incorrect(33):**

- SSX board's 27M reference clock (REF CLK 1) line trouble
- Rx TC FIFO (IC613 on SSX board) trouble
- Rx TC FIFO control signals abnormal

**Wr DMA Fail(34):**

- DMA clock (X500 on SSX) abnormal
- DMA controller (IC505 on SSX board) trouble
- IC socket (for DMA controller) trouble (poor contact)

**Rd Data Incorrect(35):**

- SSX board's 27M reference clock (REF CLK 3) line trouble
- DMA WRITE FIFO (IC503, 504, 506, 507 on SSX board) trouble
- DMA WRITE FIFO control signals abnormal
- Bus buffers (IC508, 509 on SSX board) trouble

**Rd DMA Fail(36):**

- DMA clock (X500 on SSX) trouble
- DMA controller (IC505 on SSX board) trouble
- IC socket (for DMA controller) trouble (poor contact)

**HDD Data Not In(37):**

- SSX board's 27M reference clock (REF CLK 4) line trouble
- DMA FIFO (IC510, 511 on SSX board) trouble
- DMA FIFO control signals abnormal
- DMA controller (IC505 on SSX board) trouble
- IC socket (for DMA controller) trouble (poor contact)

**TxTC Data Incorrect(38):**

- SSX board's 27M reference clock (REF CLK 2) line trouble
- EXT FRAME signal (TP101 on SSX board) abnormal
- Tx TC FIFO (IC702 on SSX board) trouble
- Tx TC FIFO control signals abnormal

Protecting operation:

Disables the access to the hard disk drive.

**Note**

All operations can not be performed concerning the hard disk drives.

---

**ERROR-D4      SSX IC RELATED ERROR  
(SSX IC ERROR)**

Description:            Abnormality is detected during the initialization or data transfer for SD-RAM on SSX board.

Sub error messages and Detecting conditions:

**SDRAM Init Fail(41):**

When the initialized completing flag is not set to the system status register of SSX IC (IC800 on SSX board) until lapses about 10 ms after the power-on reset.

**SDRAM-FIFO Incompl(42):**

When the completing flag of the last data transfer command is not set to the system status register of SSX IC (IC800 on SSX board) during about 1 ms just before its command executes for the data transfer to FIFO from SD-RAM on the SSX board.

**SDRAM-FIFO Fail(43):**

When the acknowledged flag of the transfer is not set to the system status register of SSX IC (IC800 on SSX board) until lapses about 1 ms just after its command executes for the data transfer to FIFO from SD-RAM on the SSX board.

**HDD-SDRAM Incompl 1(44):** (Refer to **Supp. remarks** on next page.)

When the completing flag of the last data transfer command is not set to the system status register of SSX IC (IC800 on SSX board) during about 1 ms just before its command executes for the data transfer to SD-RAM on the SSX board from the hard disk drives.

**HDD-SDRAM Incompl 2(45):**

When the acknowledged flag of the transfer is not set to the system status register of SSX IC (IC800 on SSX board) until lapses about 1 ms just after its command executes for the data transfer to SD-RAM on the SSX board from the hard disk drives.

Possible causes:

**SDRAM Init Fail(41):**

- SSX board's 27M reference clock (CLK27) line trouble
- SSX board's 54M reference clock (CLK54) line trouble

**SDRAM-FIFO Incompl(42) or SDRAM-FIFO Fail(43):**

- SSX board's 27M reference clock (REF CLK 3) line trouble
- DMA clock (X500 on SSX) abnormal
- DMA WRITE FIFO (IC503, 504, 506, 507 on SSX board) trouble
- DMA WRITE FIFO control signals abnormal
- DMA controller (IC505 on SSX board) trouble
- IC socket (for DMA controller) trouble (poor contact)

**HDD-SDRAM Incompl 1(44) or HDD-SDRAM Incompl 2(45):**

- SSX board's 27M reference clock (REF CLK 4) line trouble
- DMA clock (X500 on SSX) abnormal
- DMA FIFO (IC510, 511 on SSX board) trouble
- DMA FIFO control signals abnormal
- DMA controller (IC505 on SSX board) trouble
- IC socket (for DMA controller) trouble (poor contact)



Protecting operation: Disables the access to the hard disk drive.

**Note**

All operations can not be performed concerning the hard disk drives.

**Supp. remarks** (for Error-D4)

For the sub error message “**HDD-SDRAM Incompl 1(44)**”, the error message of error code D1 is not displayed in the time data display area on the lower control panel and it is not superimposed on the video monitor. However, stores as the error logging data.

---

## **ERROR-D5 FILE SYSTEM RELATED ERROR (FILE SYSTEM)**

Description: The occurrence of abnormal state related to the file system is detected during recording or playing back the hard disk drive(s) or when to performing the recording or playing back the hard disk drive(s).

Sub error messages and Detecting conditions:

**Illegal Time Line(51):**

When the specified time line from the editor, etc. via 9-pin serial remote is abnormal.

Ex. 1. When the setting time line (IN point, duration, etc.) exceeds the maximum permissible value of the file system.

Ex. 2. When the synchronized audio data to the video time line is not found in the hard disk drive(s) during the audio/video free playback.

**Fragmentation Over(52):**

When the number of separated recording files on the hard disk drive(s) exceeds 5% of the total recording file number.

Possible causes:

**Illegal Time Line(51):**

The specified time line from the editor, etc. via 9-pin serial remote is unsuitable.

**Note**

This error is not occurred when the normally time line is set.

**Fragmentation Over(52):** (Refer to **Supp. remarks.**)

Because a recording file is uncontinuously recorded in areas of two or more on the hard disk drive(s).

Protecting operations: **Illegal Time Line(51):** Stops the playback.  
**Fragmentation Over(52):** Disables the next recording.

**Supp. remarks**

If error “**Fragmentation Over(52)**” was occurred, the recording file of the error’s source required deleting to return in the state that can be recorded.

## ERROR-D6 SSX OPERATIONAL ERROR (SSX OP ERROR)

Description: Abnormality is detected during a record or a playback of the hard disk(s).

Sub error messages and Detecting conditions:

**State Time Over(61):**

When the HDD operation does not change to the mode that corresponds to the playback even though the play back time has elapsed for five seconds.

**Buffer Over Flow(62):**

- SSX ROM version 3.20 and later  
During recording, the recording buffer overflows, and the overflow is not resolved within five seconds.
- Earlier version than above  
During recording, the recording buffer overflows.

**Normal Playback Fail(63):** (Refer to No. 1 of **Supp. remarks.**)

When the reading from the video memory becomes irregular fleetingly during normal playback (× 1 normal speed).

**External HDD (64):** (SSX ROM version 3.10 and later)

The abnormality is found in the BKNW-116 connected to this unit.

**Recovered Over Flow (65):** (SSX ROM version 3.20 and later)

During recording, the recording buffer overflows, but the overflow is resolved within five seconds.

Possible causes:

**State Time Over(61):**

- 
- HDD trouble
  - SSX board trouble

**Buffer Over Flow(62):** (Refer to No. 2 of **Supp. remarks.**)

Because the recording pause time exceeds the maximum permissible duration.

**Normal Playback Fail(63):** (Refer to No. 2 of **Supp. remarks.**)

Because the playing back pause time exceeds the maximum permissible duration.

**External HDD (64):**

One of the following problems occurs in the BKNW-116 connected to this unit.

- Warm-up under low temperature failed.  
(Warm-up does not complete within 30 minutes.)
- A current overflow is found in the warm-up circuit.
- A temporary power failure is found.
- A cooling fan motor stoppage is found.

**Recovered Over Flow (65):** (Refer to No. 2 of **Supp. remarks.**)

Because the recording pause time exceeds the maximum permissible duration.

Protecting operations: **State Time Over(61):** Stops the playback.

**Buffer Over Flow(62):**

Stops the record. Subsequent recording is disabled.

**Normal Playback Fail(62):** None. (Continue the playback operation.)

**External HDD (64):**

New recording and playback are disabled on the BKNW-116. However, any recording or playback in progress continues.

**Recovered Over Flow (65):**

Stops recording. Subsequent recording is disabled until the STOP button is pressed.

**Supp. remarks**

1. For the sub error message “**Normal Playback Fail(63)**”, the error message of error code D8 is not displayed in the time data display area on the lower control panel and it is not superimposed on the video monitor. However, stores as the error logging data.  
Even if this error arise, a play back is continued. As a result, any influence may appear on video and audio (freeze, etc.).
2. When the media error occurs, HDD pauses the recording or playing back. If these errors occur continuously, the record and playback stay a pause during which it occurs.
  - During recording (SSX ROM version 3.20 and later)  
As recording pause continues, the recording data accumulate in the recording buffer.  
If the overflow is resolved within five seconds after the buffer becomes full, the sub error message “**Recovered Over Flow (65)**” appears. Press the STOP button, and retry recording.  
If the overflow is not resolved within five seconds, a sub error message “**Buffer Over Flow (62)**” appears. In this case, turn the power to this unit off then on again, and retry recording.  
If the sub error message “**Buffer Over Flow (62)**” appears, check the HDDs on which a medium error occurs frequently with the error log, and replace the HDD.
  - During recording (Earlier version than above)  
When recording pause continues, the recording data accumulate in the recording buffer.  
When the buffer is full, the sub error message “**Buffer Over Flow (62)**” appears. In this case, turn the power to this unit off then on again, and retry recording.
  - During playback  
When the playback buffer is empty because no playback data are sent from the HDDs, error code D6 is issued. In this case, playback can continue, and no error message appears.

---

## ERROR-D7 SCSI DRIVER RELATED ERROR (SCSI DRIVER)

Description: Abnormality (parity error, bus stop) in the SCSI bus is detected.

Sub error messages and Detecting conditions:

**SCSI Bus Parity(71):**

When SCSI protocol controller (IC400 on SSX board) detects the parity error.

**SCSI Bus Stop(72):**

When the SCSI bus keeps a condition except BUS FREE for more than fifteen seconds.

Possible causes:

**SCSI Bus Parity(71):**

- No connection with SCSI terminator

**Note**

1. When the BKNW-116 is not connected to this unit, be sure to connect the SCSI terminator supplied with this unit to the SCSI connector on the connector panel.
2. When connecting the BKNW-116 to this unit, be sure to connect the SCSI terminator that was connected the SCSI connector on the connector panel to one of the two SCSI connectors of the BKNW-116.

- SCSI connector (on the connector panel) trouble
- Internal SCSI cable connection defect or disconnect (SSX board – Hard disk drives – SCSI connector)
- External SCSI cable (disk array cable) connection defect or disconnect (When the BKNW-116 is connected.)
- SCSI cable connection defect or disconnect in the BKNW-116.
- SCSI differential drivers (IC401 through 409 on SSX-1 board, or IC401 through 403 on SSX-2 board) trouble

**SCSI Bus Stop(72):**

In addition to the mentioned above of the possible causes

- Hard disk drive trouble

Protecting operations: Stops the record or playback.

Disables the access to the hard disk drive.

**Note**

All operations can not be performed concerning the hard disk drives.

---

## ERROR-D8 SCSI TARGET ERROR (SCSI TARGET)

**Description:** The occurrence of the medium error or hardware error in hard disk drive is detected by the transmitted sense code from the hard disk drive (HDD).

**Sub error messages and Detecting conditions:**

**Medium Error in File(81):**

When the medium error occurs during the read/write of the file system data in HDD.

**Medium Error during AV Record/Playback(82):**

(Refer to No. 1 of **Supp. remarks.**)

When the medium error occurs during the record/playback of the audio/video data in HDD.

**Medium Error during NonAV Record/Playback(83):**

(Refer to No. 1 of **Supp. remarks.**)

When the medium error occurs during the record/playback of except the audio/video data in HDD.

**HDD Hardware Error(84):**

When the hardware error occurs during the command execution in HDD.

**Possible causes:**

**HDD Hardware Error(84):**

HDD trouble (displayed SCSI ID) (Refer to No. 4 of **Supp. remarks.**)

Except above sub error message:

Medium trouble

**Protecting operations:**

**Medium Error in File(81):**

None.

**Note**

Medium error position is recovered automatically after turning off and on the power.

**Medium Error during AV Record/Playback(82):**

None. (Refer to No. 2 in **Supp. remarks.**)

**Medium Error during NonAV Record/Playback(83):**

Recovers the medium error position automatically.

(Refer to No. 3 in **Supp. remarks.**)

**HDD Hardware Error(84):**

Disable access to the HDD with which a hardware error was generated.

When a hardware error is generated with the BKNW-116, an emergency zone change menu (refer to the operation manual) appears.

### Supp. remarks

1. For the sub error messages “**Medium Error during AV Record/Playback(82)**” and “**Medium Error during NonAV Record/Playback(83)**”, the error message of error code D8 is not displayed in the time data display area on the lower control panel and it is not superimposed on the video monitor. However, stores as the error logging data.
2. For the sub error message “**Medium Error during AV Record/Playback(82)**”, the medium error point is not recover automatically. Perform D2 : HDD CLEANING of the maintenance mode so as to recover.

#### **CAUTION**

When the menu in D2 : HDD CLEANING execute, the recorded audio and video data all disappears.

3. During play back, the back up data that is recorded in another area is copied automatically after automatic recovery. Then the copied data is played back automatically.  
Moreover, during record, normal data is recorded automatically after automatic recovery.
4. When the sub error message “**HDD Hardware Error(84)**” is occurred, check the failed HDD’s ID.  
Then, be sure to replace the HDD.

## Section 4

### Maintenance Mode

#### 4-1. Overview of Maintenance Mode

This unit has the maintenance mode that is useful during maintenance and trouble diagnosis.

This maintenance mode consists of the three modes below. The contents of the maintenance mode are superimposed on the video monitor connected to the VIDEO OUTPUT COMPOSITE 3 (SUPER) connector.

(To superimpose the contents of the maintenance mode, set the CHARACTER switch on the sub control panel to ON.)

```
MAINTENANCE MODE

*M0 : TAPE MAINTENANCE
M1 : DISK MAINTENANCE
M2 : ERROR LOGGER
```

#### Note

The typeface of characters displayed on the video monitor differs from the actual one.

(Mode screen during activation of maintenance mode)

#### M0 : TAPE MAINTENANCE ..... (Section 4-2)

This mode is used for maintenance of a VTR part.

```
TAPE MAINTENANCE MODE

*C0 : SERVO CHECK
C1 : RF CHECK
C2 : AUDIO/VIDEO CHECK
C3 : BETACAM PB CHECK
C4 : OTHERS CHECK
A0 : SERVO ADJUST
A1 : RF ADJUST
A2 : AUDIO/VIDEO ADJUST
A3 : BETACAM PB ADJUST
```

#### M1 : DISK MAINTENANCE ..... (Section 4-3)

This mode is used for maintenance of the hard disk drives.

```
DISK MAINTENANCE MODE

*D0:ERROR COUNTER
D1:DEVICE INFO
D2:DIAGNOSIS
D3:INSTALLATION
D9:DISK CLEANING
```

#### M2 : ERROR LOGGER ..... (Section 4-4)

This mode is used to display the record of errors (error logging) that occur in this unit.

```
ERROR LOGGER
(001/003)
*001 REEL TROUBLE-1
002 TAPE TENSION ERROR
003 INTERNAL I/F ERROR
-----
TAPE ERROR ON
DISK ERROR ON
WARNING ON
CONDITION ON

'96 07 03 09:23:00
```

#### Note

The display on the left is one of the displayed examples.

## Buttons and Switches for Operation

The main buttons and switches related to the operation of maintenance mode are as follows: The ordinary functions of these buttons and switches and how to use them are described below.

### ① Time data display area

The time data display area displays the menu (mode) No., menu title, selection item, status, or data. The menu (mode) No. or selection item block blinks while the menu (mode) or selection item is specified (not including the servo menu in the TAPE maintenance mode). For manual adjustment, the data block blinks. In the state where the tape operation (PB, REC, F FWD, and REW) can be performed, the time data display area functions as an ordinary time counter.

There is a menu (mode) that contains insufficient information displayed in the time data display area. Since the information displayed on the superimpose picture is easier to operate and check, usually use a video monitor.

### ② MENU button

Press this button in the maintenance mode to return to the screen (state) preceding by one step.

The maintenance mode is terminated if this button is pressed when the mode screen is displayed (mode No. M0, M1, or M2 blinks in a time data display area).

### ③ SET button

Press this button in the maintenance mode to select or execute the menu (mode) selected using a ⑧ search dial.

The maintenance mode can be activated when this SET button is pressed while pressing the ④ CTL/TC/UB button in the setup menu mode with ⑩ DIP switch S1100-2 on the SS-63 board set to ON (upper).

### ④ CTL/TC/UB button

The maintenance mode can be activated when the ③ SET button is pressed while pressing this button in the setup menu mode with ⑩ DIP switch S1100-2 on the SS-63 board set to ON (upper).

### ⑤ RESET button

Press this button in the error logger mode to erase the recorded error log.

### ⑥ STOP button

The data value of an electronic volume control can be displayed only while the STOP button is pressed in RF system automatic adjustment menu.

### ⑦ JOG button

The ⑧ search dial enters the JOG mode when this button is pressed (the lamp does not light in this case). The data value or setting can be changed when the ⑧ search dial is turned while pressing this button.

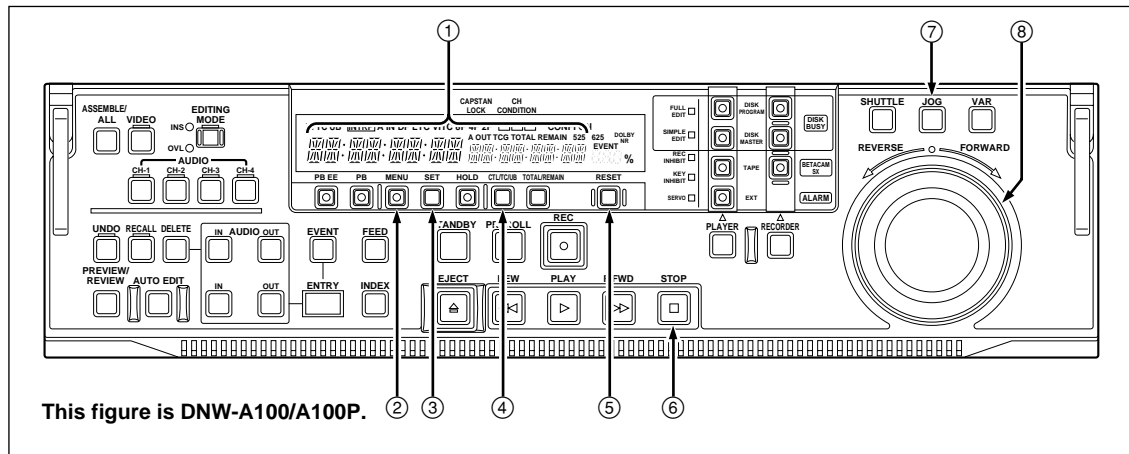
### ⑧ Search dial

Turn the search dial to specify the menu (mode) or selection item. An “\*” mark moves on the video monitor. In a time data display area, the display is replaced and the specified item blinks. (“JOG DIAL” is displayed on the video monitor.)

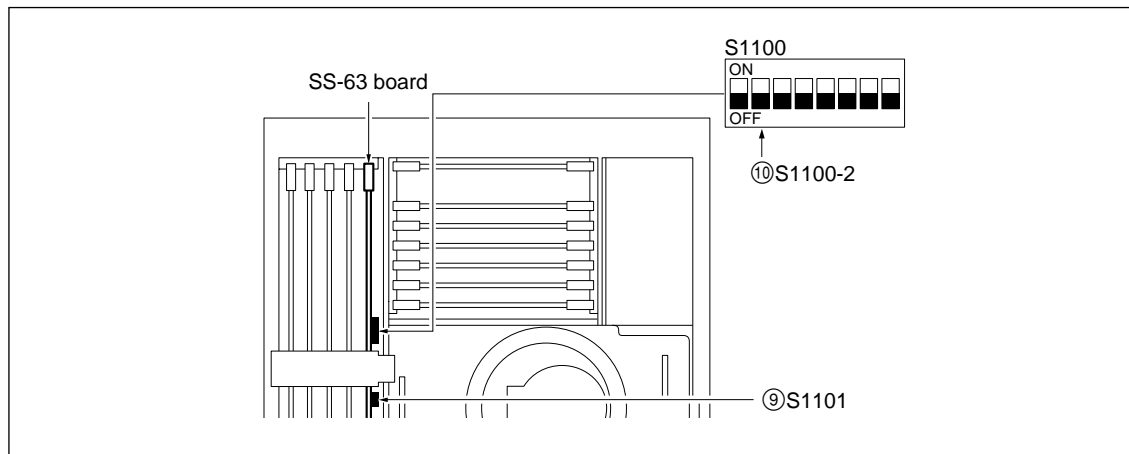
The data value or setting can be changed when the search dial is turned while pressing the ⑦ JOG button.



- ⑨ S1101/SS-63 board: Maintenance mode start switch (MAINTENANCE MODE START)  
Press this switch to activate the maintenance mode.
- ⑩ S1100-2/SS-63 board: Maintenance mode access approval switch (MAINTENANCE MODE Access)  
Set this switch to ON (upper) in advance when activating the maintenance mode by the button operation on the control panel.



Lower Control Panel



Location of Switches on SS-63 Board

**Note**

Remove the upper lid referring to Section 2-3-1 when operating the switches on the SS-63 board. Change the setting of DIP switch S1100 with the power switch set to OFF.

---

## Activating the Maintenance Mode

- (1) Confirm that the video monitor is connected to the VIDEO OUTPUT COMPOSITE 3 (SUPER) connector.
- (2) Press the ⑨ S1101 switch (on the SS-63 board).
- (3) The mode screen in the maintenance mode is superimposed on the video monitor.  
In a ① time data display area, "M0-TAPE MAINTEN" is displayed and the M0 block blinks.

```

  MAINTENANCE MODE
*M0 : TAPE MAINTENANCE
M1 : DISK MAINTENANCE
M2 : ERROR LOGGER

```

Video Monitor

```

M0 - TAPE MAINTEN

```

Time Data Display Area

---

## Activating the Maintenance Mode from Control Panel

The maintenance mode can be activated by the operation below when the S1100-2 switch (on the SS-63 board) is set to ON (upper).

- (1) Press the ② MENU button once.  
(Execute the setup menu mode from the operation mode.)
- (2) Press the ③ SET button while pressing the ④ CTL/TC/UB button.  
(Execute the maintenance mode from the setup menu mode.)
- (3) The mode screen in the maintenance mode is displayed on the video monitor.

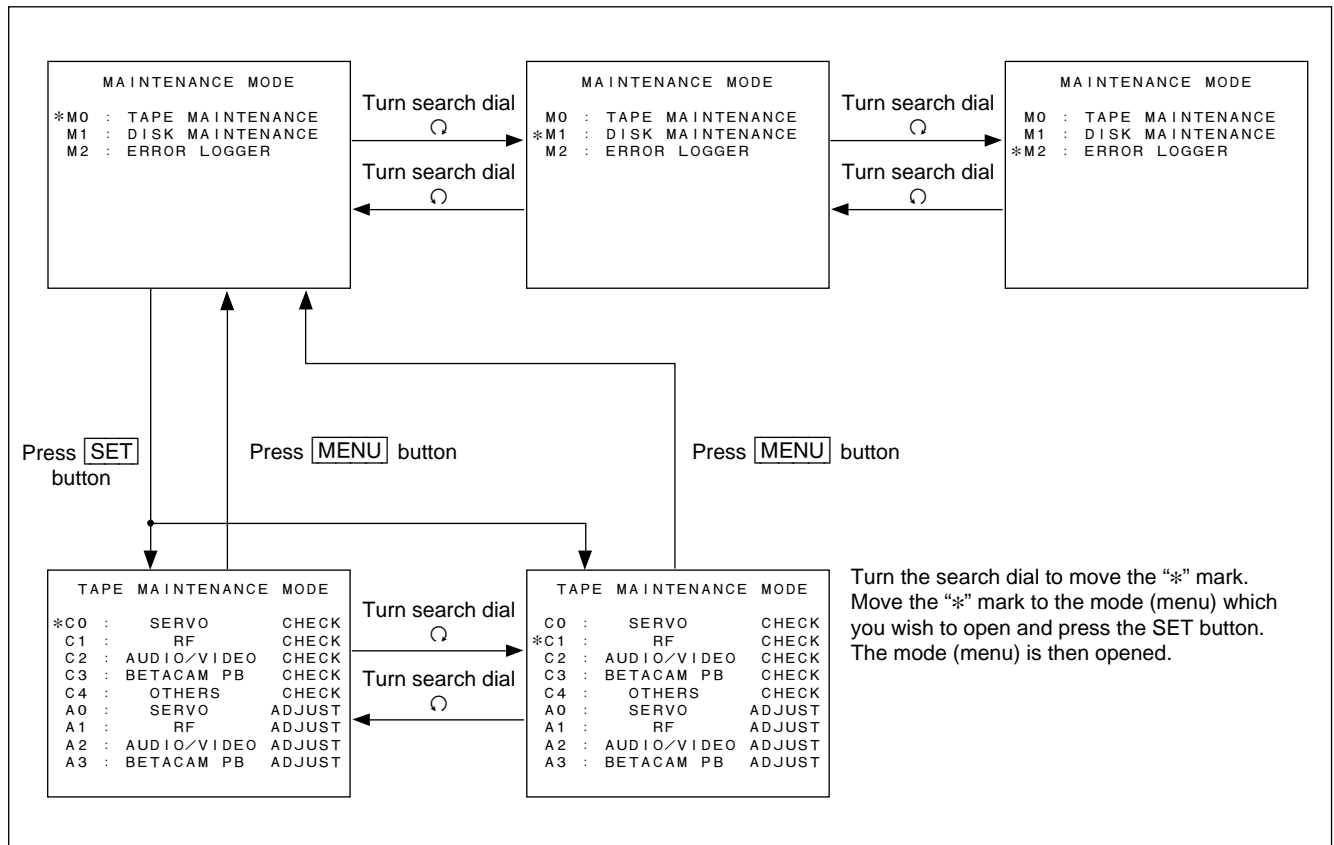
---

## Terminating the Maintenance Mode

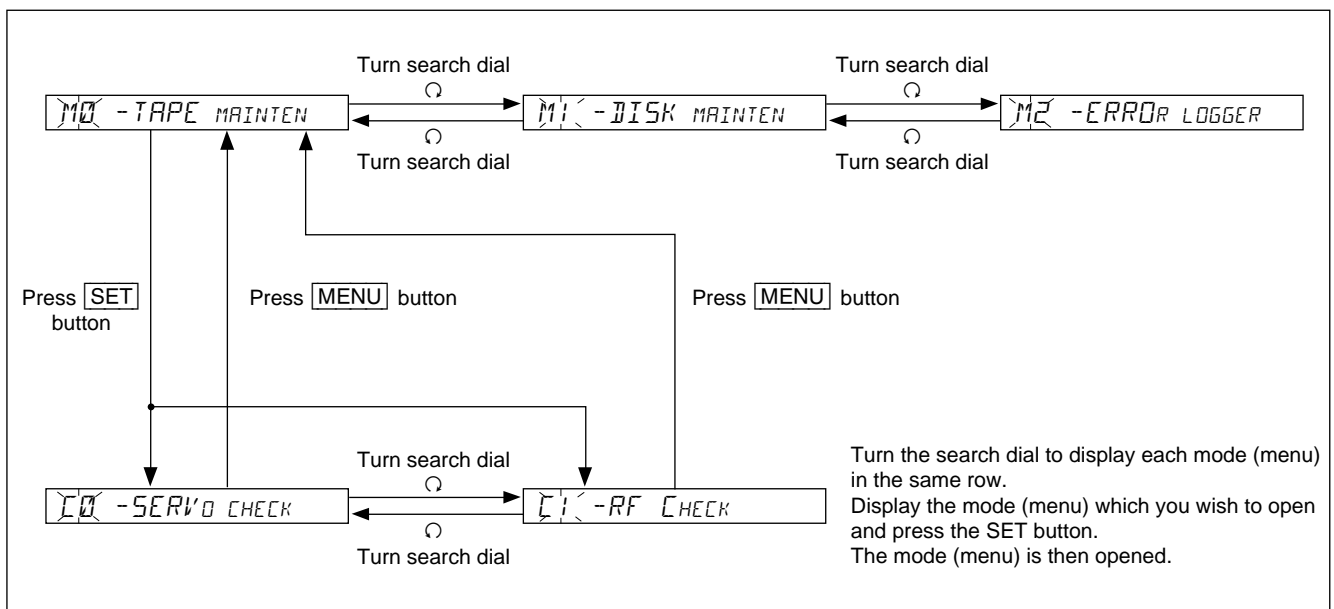
- (1) Press the ② MENU button several times to display the mode screen on the video monitor.  
The selected mode No. and title are displayed in a time counter.
- (2) Press the ② MENU button again to terminate the maintenance mode.

## Specifying the Menu (Mode) and Item

How to specify the menu (mode) and item using the search dial (JOG mode) is described below with the mode selection given as an example.



Example in Superimpose Picture



Example in Time Data Display Area

4-2. TAPE Maintenance Mode (M0)

4-2-1. Overviews

The TAPE maintenance mode is used for the maintenance and check of a VTR.  
This unit has the nine submodes below.

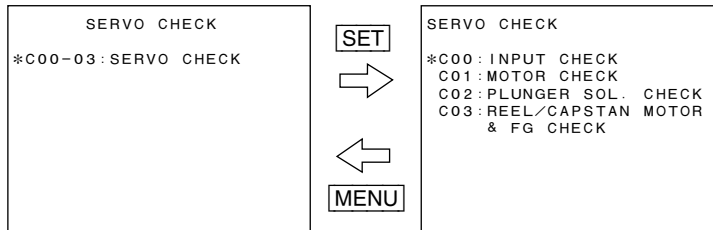
TAPE MAINTENANCE MODE		
*C0	: SERVO	CHECK
C1	: RF	CHECK
C2	: AUDIO/VIDEO	CHECK
C3	: BETACAM PB	CHECK
C4	: OTHERS	CHECK
A0	: SERVO	ADJUST
A1	: RF	ADJUST
A2	: AUDIO/VIDEO	ADJUST
A3	: BETACAM PB	ADJUST

TAPE Maintenance Mode



## C0 : SERVO CHECK

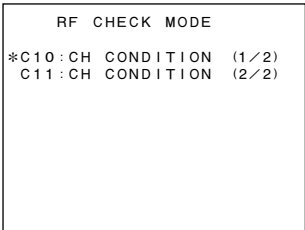
This submode is used to check the servo system of a VTR.  
For more details, refer to Section 4-2-2 (on page 4-14).



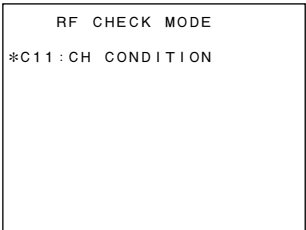
Title	Page	Description
C00 : INPUT CHECK	—	Check menu of sensors (not including a part of sensors)
C000 : CASSETTE SW	4-15	Checks the cassette tab and REC inhibit sensors.
C001 : CASSETTE COMP. SW	4-16	Checks the cassette-in and cassette size sensors.
C002 : TOP/END SENSOR	4-17	Checks the tape top and tape end sensors.
C003 : DEW SENSOR	4-18	Checks the dew condensation sensors.
C01 : MOTOR CHECK	—	Check menu of motors (except a fan motor) and partial sensors
C010 : S REEL MOTOR	4-19	Checks the S reel motor.
C011 : T REEL MOTOR	4-19	Checks the T reel motor.
C012 : THREADING MOTOR	4-20	Checks the threading motor and threading/unthreading end sensors.
C013 : CASSETTE COMP.	4-22	Checks the cassette compartment motor and cassette-down sensors.
C014 : CAPSTAN MOTOR	4-24	Automatically checks the capstan motor.
C015 : DRUM MOTOR	4-25	Automatically checks the drum motor.
C016 : REEL SHIFT MOTOR	4-26	Checks the reel shift motor and reel position sensors.
C02 : PLUNGER SOL. CHECK	—	Check menu of solenoids
C020 : PINCH ROLLER	4-27	Checks the pinch roller solenoid.
C021 : S REEL BRAKE	4-28	Checks the S reel brake solenoid.
C022 : T REEL BRAKE	4-28	Checks the T reel brake solenoid.
C023 : CLEANING ROLLER	4-29	Checks the cleaning roller solenoid.
C03 : REEL/CAPSTAN MOTOR & FG CHECK	4-30	Continuous check menu of reel and capstan motors

C1 : RF CHECK

This submode is used to check the RF system.  
For more details, refer to Section 4-2-3 (on page 4-31).



For DNW-A100/A100P

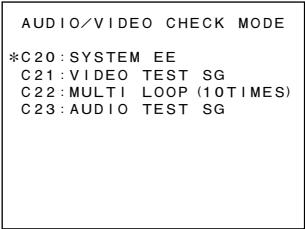


For DNW-A50/A45/A50P/A45P

Title	Page	Description
C10 : CH CONDITION (1/2)	4-31	Checks the error condition for each PB head (A1, A3, A5, A7, B1, B3, B5, and B7) in a drum. (Used exclusively for DNW-A100/A100P.)
C11 : CH CONDITION (2/2) C11 : CH CONDITION	4-31	Checks the error condition for each PB head (A2, A4, A6, A8, B2, B4, B6, and B8) in a drum.

C2 : AUDIO/VIDEO CHECK

This submode is used to check the audio and video systems.  
For more details, refer to Section 4-2-4 (on page 4-35).



Title	Page	Description
C20 : SYSTEM EE	4-36	Sets the system E-E function in the maintenance mode.
C21 : VIDEO TEST SG	4-36	Sets the video test signal generator incorporated into this unit.
C22 : MULTI LOOP	4-37	Sets the multi-loop function in the maintenance mode.
C23 : AUDIO TEST SG	4-37	Sets the audio test signal generator incorporated into this unit.

### C3 : BETACAM PB CHECK

This submode is used to check the PB system based on a Betacam/Betacam SP format.  
For more details, refer to Section 4-2-5 (on page 4-38).

```
BETACAM PB CHECK MODE
*C30: CHANNEL CONDITION
```

Title	Page	Description
C30 : CHANNEL CONDITION	4-38	Checks the RF level condition for each video channel (Y and C) to be played back.

### C4 : OTHERS CHECK

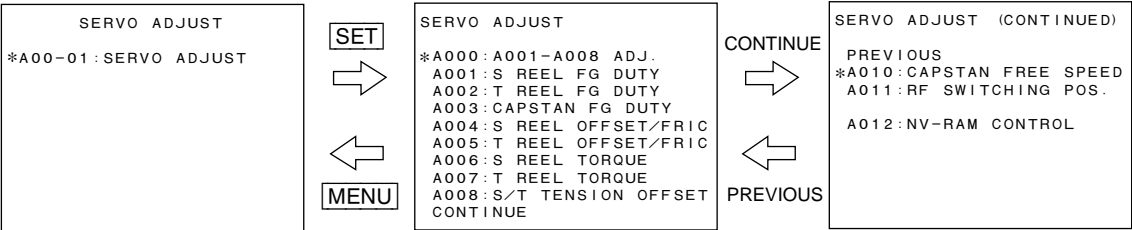
This submode is used for other checks.  
For more details, refer to Section 4-2-6 (on page 4-39).

```
OTHERS CHECK MODE
*C40: ROM VERSION
C41: SERIAL NUMBER
C42: RS-232C STATUS
C45: MEMORY CHECK
C46: HOUR METER RESET
C47: METER HEAD ROOM
C48: PATH MODE SEL
```

Title	Page	Description
C40 : ROM VERSION	4-40	Displays the unit's model name, ROM version, and optionally mounted board.
C41 : SERIAL NUMBER	4-40	Displays and corrects the serial number of this unit.
C42 : RS-232C STATUS	4-41	Displays the interface communication state of an RS-232C connector.
C45 : MEMORY CHECK	4-42	Displays the data in ROM. (Used for check at the factory.)
C46 : HOUR METER RESET	4-42	Displays and resets the resettable hours meter and thread counter.
C47 : METER HEAD ROOM	4-43	Sets the head room of an audio level meter.
C48 : PATH MODE SEL	4-43	Sets the tape PB mode. (Used for tape transport adjustment.)

A0 : SERVO ADJUST

This submode is used to adjust the servo system of a VTR.  
For more details, refer to Section 4-2-7 (on page 4-44).



Title	Page	Description
A000 : A001-A008 ADJ.	4-45	Continuously executes the automatic adjustment menus (A001 to A008).
A001 : S REEL FG DUTY	4-46	Automatically adjusts the duty ratio of an S reel FG.
A002 : T REEL FG DUTY	4-46	Automatically adjusts the duty ratio of a T reel FG.
A003 : CAPSTAN FG DUTY	4-46	Automatically adjusts the duty ratio of a capstan FG.
A004 : S REEL OFFSET/FRIC	4-46	Automatically adjusts the S reel offset and friction.
A005 : T REEL OFFSET/FRIC	4-46	Automatically adjusts the T reel offset and friction.
A006 : S REEL TORQUE	4-46	Automatically adjusts the S reel torque.
A007 : T REEL TORQUE	4-46	Automatically adjusts the T reel torque.
A008 : S/T TENSION OFFSET	4-46	Automatically adjusts the tension regulator offset values on the S and T sides.
A010 : CAPSTAN FREE SPEED	4-47	Automatically adjusts the capstan free speed.
A011 : RF SWITCHING POS.	4-48	Automatically adjusts the RF switching position.
A012 : NV-RAM CONTROL	4-50	Saves the adjustment data in a servo system.



## A1 : RF ADJUST

This submode is used to adjust the RF system.

For more details, refer to Section 4-2-8 (on page 4-51).

```
RF ADJUST MODE
*A10: EQUALIZER (1/2)
A11: EQUALIZER (2/2)
A12: REC CURRENT
A13: PLAY PLL
A14: FWD PLL
A15: REV PLL
A16: A/D GAIN
A17: A10-A16 ALL ADJUST
A1F: NV-RAM CONTROL
```

**For DNW-A100/A100P**

```
RF ADJUST MODE
*A11: EQUALIZER
A12: REC CURRENT
A13: PLAY PLL
A14: FWD PLL
A15: REV PLL
A16: A/D GAIN
A17: A11-A16 ALL ADJUST
A1F: NV-RAM CONTROL
```

**For DNW-A50/A45/A50P/A45P**

Title	Page	Description
A10 : EQUALIZER (1/2)	4-51	Automatically adjusts the PB head playing back level and PB equalizer (for A1, A3, A5, A7, B1, B3, B5, and B7 channels). (Used exclusively for DNW-A100/A100P.)
A11 : EQUALIZER (2/2) A11 : EQUALIZER	4-51	Automatically adjusts the PB head playing back level and PB equalizer (for A2, A4, A6, A8, B2, B4, B6, and B8 channels).
A12 : REC CURRENT	4-51	Automatically adjusts the recording current.
A13 : PLAY PLL	4-51	Automatically adjusts the PB PLL circuit (in the PLAY mode).
A14 : FWD PLL	4-51	Automatically adjusts the PB PLL circuit (in the FORWARD mode).
A15 : REV PLL	4-51	Automatically adjusts the PB PLL circuit (in the REVERSE mode).
A16 : A/D GAIN	4-51	Automatically adjusts the gain when a PB RF signal is converted from analog to digital.
A17 : A10-A16 ALL ADJUST A17 : A11-A16 ALL ADJUST	4-56	Continuously executes the above automatic adjustment menus A10 (A11) to A16.
A1F : NV-RAM CONTROL	4-58	Saves the adjustment data in an RF system.

A2 : AUDIO/VIDEO ADJUST

This submode is used to adjust the audio and video systems.  
For more details, refer to Section 4-2-9 (on page 4-59).

```
AUDIO/VIDEO ADJUST MODE
* A20 : VPR VR
  A21 : AD VR
  A22 : AD VR (LOOP)
  A23 : CP VR
  A2F : NV-RAM CONTROL
```

DNW with BKNW-104

```
AUDIO/VIDEO ADJUST MODE
* A20 : VPR VR
  A23 : CP VR
  A24 : INPUT CF DETECT
  A25 : DEC VR
  A26 : DEC VR (LOOP)
  A2F : NV-RAM CONTROL
```

DNW with BKDW-505/506

Title	Page	Description
A20 : VPR VR	4-60	Adjusts the reference signal system and analog video output system on the VPR-17 board.
A21 : AD VR	4-61	Adjusts the analog component video input system. (Used for BKNW-104.)
A22 : AD VR (LOOP)	4-61	Adjusts the analog component video input system (in the multi-loop state). (Used for BKNW-104.)
A23 : CP VR	4-62	Adjustment menu for the SDI and SDTI input/output interfaces
A231 : SDI ENC VCO	4-62	Automatically adjusts the SDI output interface.
A232 : SDI DEC VCO	4-62	Automatically adjusts the SDI input interface.
A233 : SDTI ENC VCO	4-62	Automatically adjusts the SDTI output interface. (Used exclusively for DNW-A100/A100P.)
A234 : SDTI DEC VCO	4-62	Sets to the adjustment mode for SDTI input interface. (Used for BKNW-103.) (Used exclusively for DNW-A100/A100P.)
A24 : INPUT CF DETECT	4-64	Automatically adjusts the color frame detection timing of a composite video input. (Used for BKDW-505/506.)
A25 : DEC VR	4-66	Adjusts the composite video input system. (Used for BKDW-505/506.)
A26 : DEC VR (LOOP)	4-66	Adjusts the composite video input (in the multi-loop state). (Used for BKDW-505/506.)
A2F : NV-RAM CONTROL	4-67	Saves the adjustment data in audio and video systems.

### A3 : BETACAM PB ADJUST

This submode is used to adjust the PB system based on a Betacam/Betacam SP format.  
For more details, refer to Section 4-2-10 (on page 4-68).

BETACAM PB ADJUST MODE
*A30 : EQ VR
A32 : DM VR 1
A33 : DM VR 2
A34 : DM VR 3
A35 : DM VR 4
A36 : DM VR 5
A37 : TBC VR
A3F : NV-RAM CONTROL

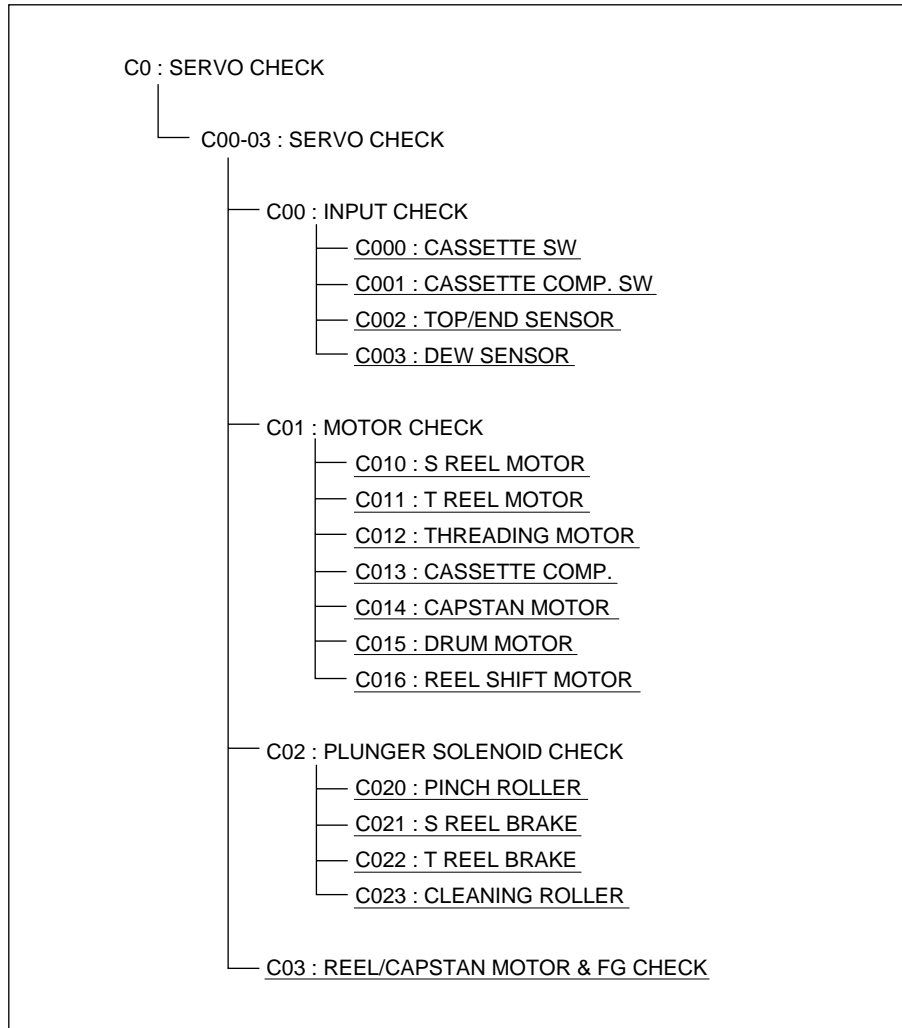
Title	Page	Description
A30 : EQ VR	4-68	Adjusts the gain of an analog Betacam PB RF amplifier (EQ-56 board).
A32 : DM VR 1	4-68	Adjusts the frequency characteristics of a primary cosine equalizer (DM-89 board).
A33 : DM VR 2	4-69	Adjusts the frequency characteristics of a secondary cosine equalizer (main) (DM-89 board).
A34 : DM VR 3	4-69	Adjusts the frequency characteristics of a secondary cosine equalizer (sub) (DM-89 board).
A35 : DM VR 4	4-69	Adjusts the guard band width and sets the DC offset level of an over-modulation compensation circuit (DM-89 board).
A36 : DM VR 5	4-69	Adjusts the threshold level of a dropout and sets the threshold level of an RF envelope (DM-89 board).
A37 : TBC VR	4-69	Sets the read clock timing on the TBC-23 board and the data of a PB VISC phase detection circuit.
A3F : NV-RAM CONTROL	4-70	Saves the adjustment data in an analog Betacam PB system.

## 4-2-2. SERVO CHECK Mode (C0)

The C0 : SERVO CHECK mode is used to check the servo system of a VTR. The underlined menus and submenus in the menu tree below are described next.

**Note**

In the servo check mode, only the menu number is displayed in a time data display area. (C00-03 is displayed as “C00”.)



**Menu Tree of Servo System Check Mode**

**Note**

A cassette tape is automatically ejected if it has been inserted into this unit when the C00-03 : SERVO CHECK screen is shifted to the lower-level menu.

## C000 : CASSETTE SW

This submenu checks the functions of cassette tab sensors and REC inhibit sensors (switches).

- (1) Push each sensor (switch) with fingers.
  - Check that “0” below the corresponding switch number changes to “1”.
- (2) Release the fingers.
  - Check that “1” below the corresponding switch number returns to “0”.
- (3) Press the MENU button when terminating the check.

### In case of NG

When cassette tab sensors (① to ⑥) are NG

- Check the corresponding sensor on the PTC-59 board.
- Check the sensor input port of MPU (IC1 on the MS-50 board).

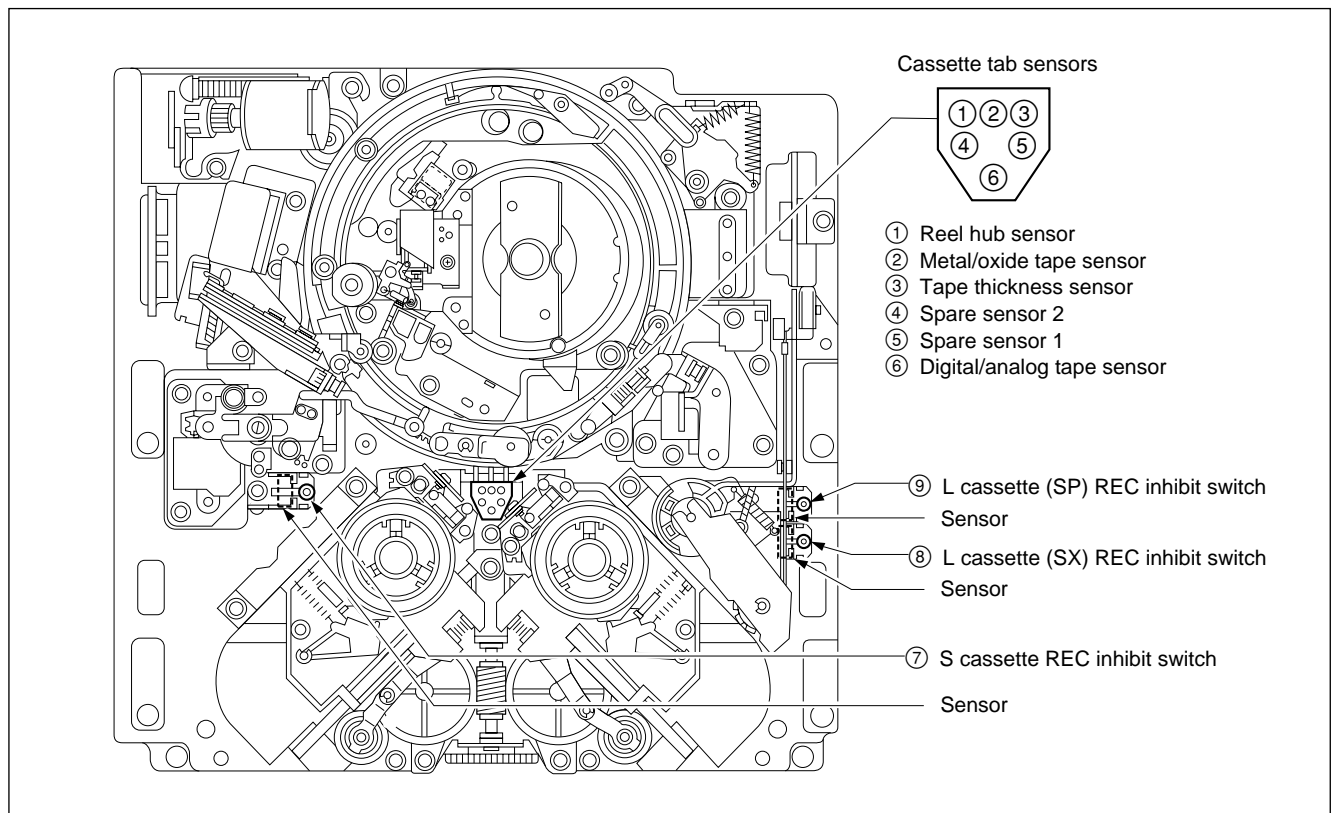
When REC inhibit sensors (⑦ to ⑨) are NG

- Check the corresponding sensor on the MS-50 board.
- Check the sensor input port of MPU (IC1 on the MS-50 board).

SERVO CHECK									
INPUT CHECK									
C000: CASSETTE SW									
1: REEL HUB		2: METAL/OX							
3: THICKNESS		4: SPARE							
5: SPARE		6: DGTL/ANLG							
7: S REC INH		8: L REC INH							
9: L SP INH									
SW 987654321		7	123	9					
000000000			4	5	8				
				6					

(Ex.: When pushing the switch ⑦)

SERVO CHECK									
INPUT CHECK									
C000: CASSETTE SW									
1: REEL HUB		2: METAL/OX							
3: THICKNESS		4: SPARE							
5: SPARE		6: DGTL/ANLG							
7: S REC INH		8: L REC INH							
9: L SP INH									
SW 987654321		7		123		9			
001000000				4		5		8	
						6			



Locations of Sensors (Switches)

## C001 : CASSETTE COMP. SW

This submenu checks the sensor (switch) function of a compartment.

- (1) Push up the cassette door to the inside with fingers.
- (2) Push each sensor (switch) in the direction indicated by the arrow with fingers.
  - Check that the corresponding switch number changes to “□”.
Then release the fingers.
  - Check that “□” returns to the former switch number.
- (3) Press the MENU button when terminating the check.

```
SERVO CHECK
INPUT CHECK

C001 : CASSETTE COMP. SW
SW1 : CASSETTE IN SW 1
SW2 : CASSETTE IN SW 2
SW3 : LARGE CASSETTE SW

  3  1  2
```

(Ex.)

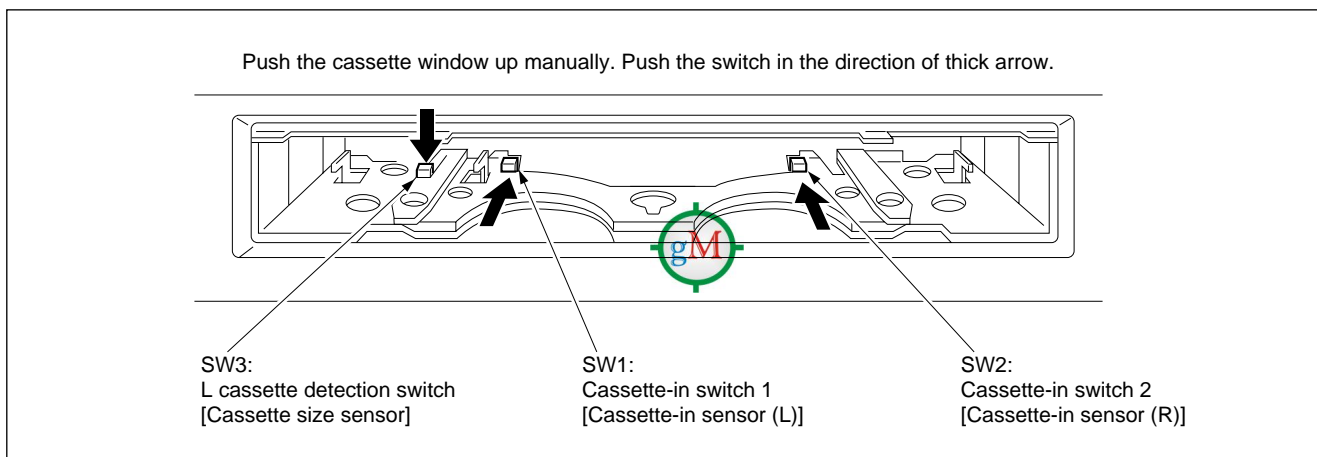
```
SERVO CHECK
INPUT CHECK

C001 : CASSETTE COMP. SW
SW1 : CASSETTE IN SW 1
SW2 : CASSETTE IN SW 2
SW3 : LARGE CASSETTE SW

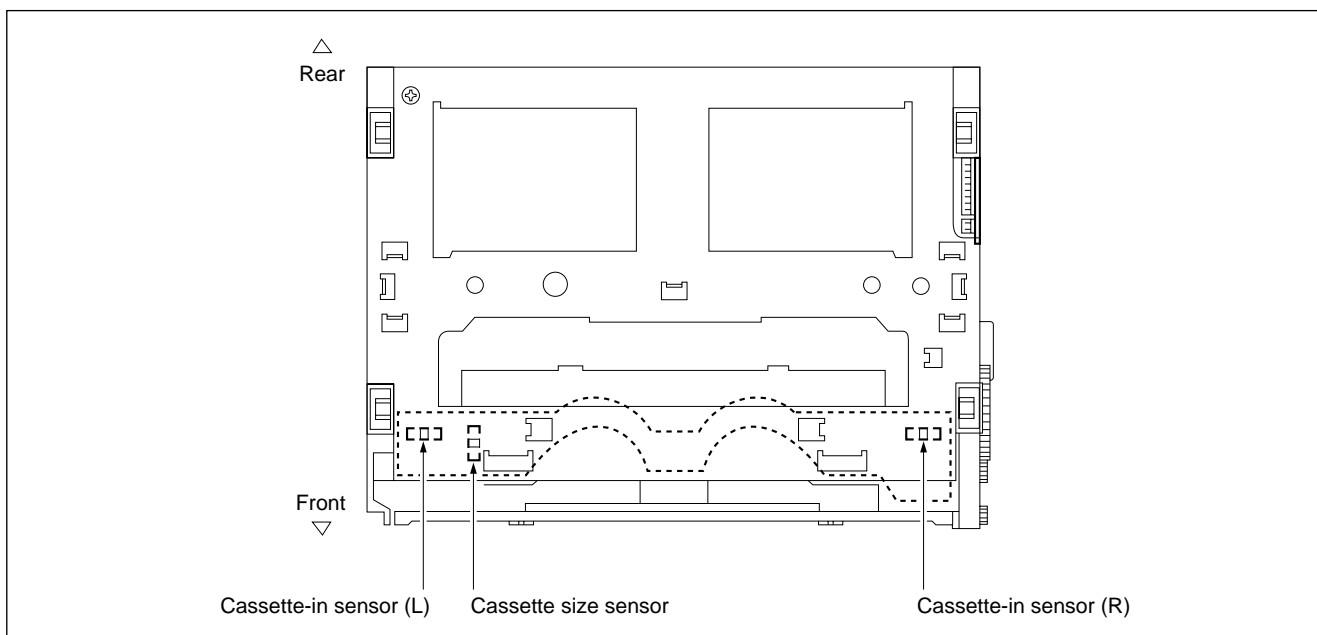
  3  □  2
```

### In case of NG

- Check the corresponding sensor on the PC-70 board.
- Check the sensor input port of MPU (IC1 on the MS-50 board).



Locations of Switches in Compartment Block



Top View of Cassette Compartment

## C002 : TOP/END SENSOR

This submenu checks the functions of a tape top sensor and tape end sensor.

- (1) Bring a metallic screwdriver near each sensor.
  - Check that the characters below the corresponding sensor changes from “OFF” to “ON!”.

### CAUTION

Never bring the screwdriver into contact with each sensor.

- (2) Keep the screwdriver away from each sensor.
  - Check that the characters below the corresponding sensor return from “ON!” to “OFF”.
- (3) Press the MENU button when terminating the check.

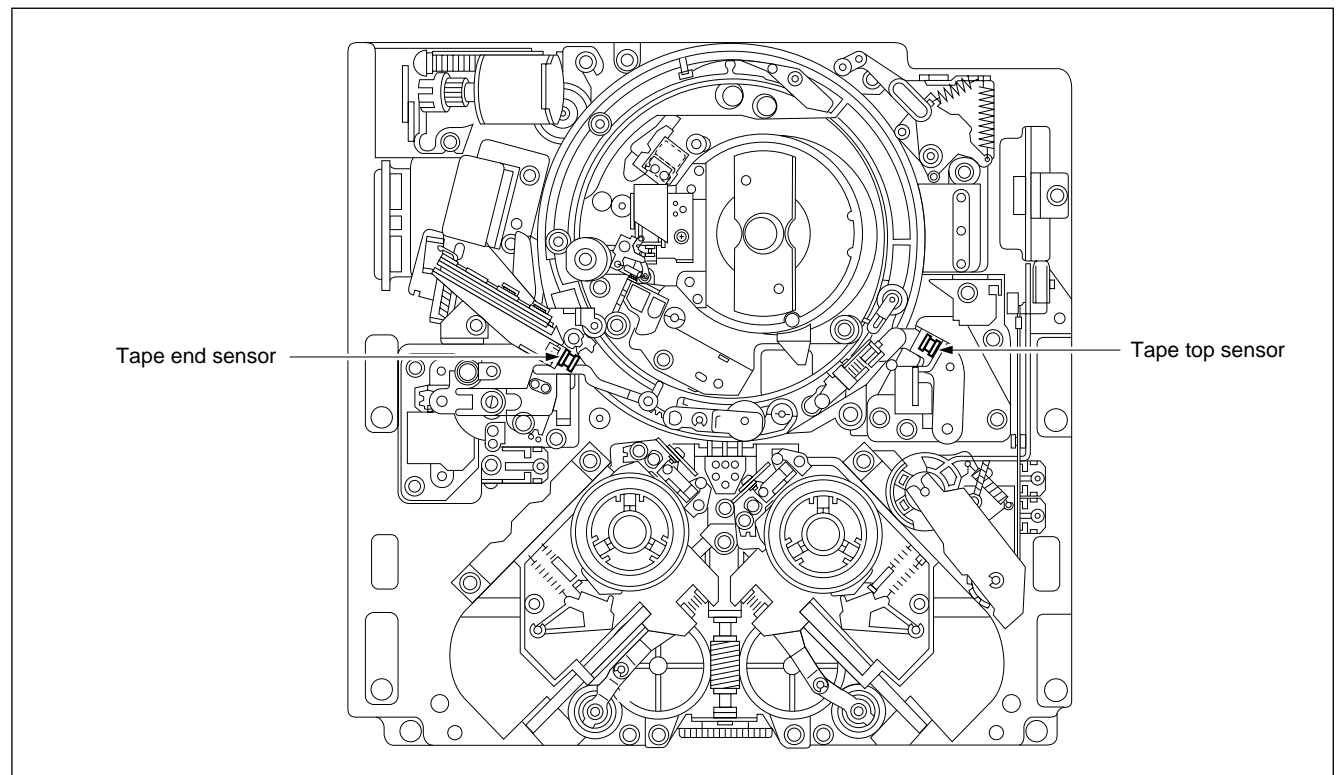
### In case of NG

- Check each sensor itself.
- Check the oscillator and detection circuit (on the MS-50 board) for sensors.
- Check the sensor input port (IC115 on the SS-63 board).

SERVO CHECK INPUT CHECK	
C002 : TOP/END SENSOR	
END SENSOR	TOP SENSOR
OFF	OFF

(Ex.)

SERVO CHECK INPUT CHECK	
C002 : TOP/END SENSOR	
END SENSOR	TOP SENSOR
OFF	ON !



Locations of Tape Top and Tape End Sensors

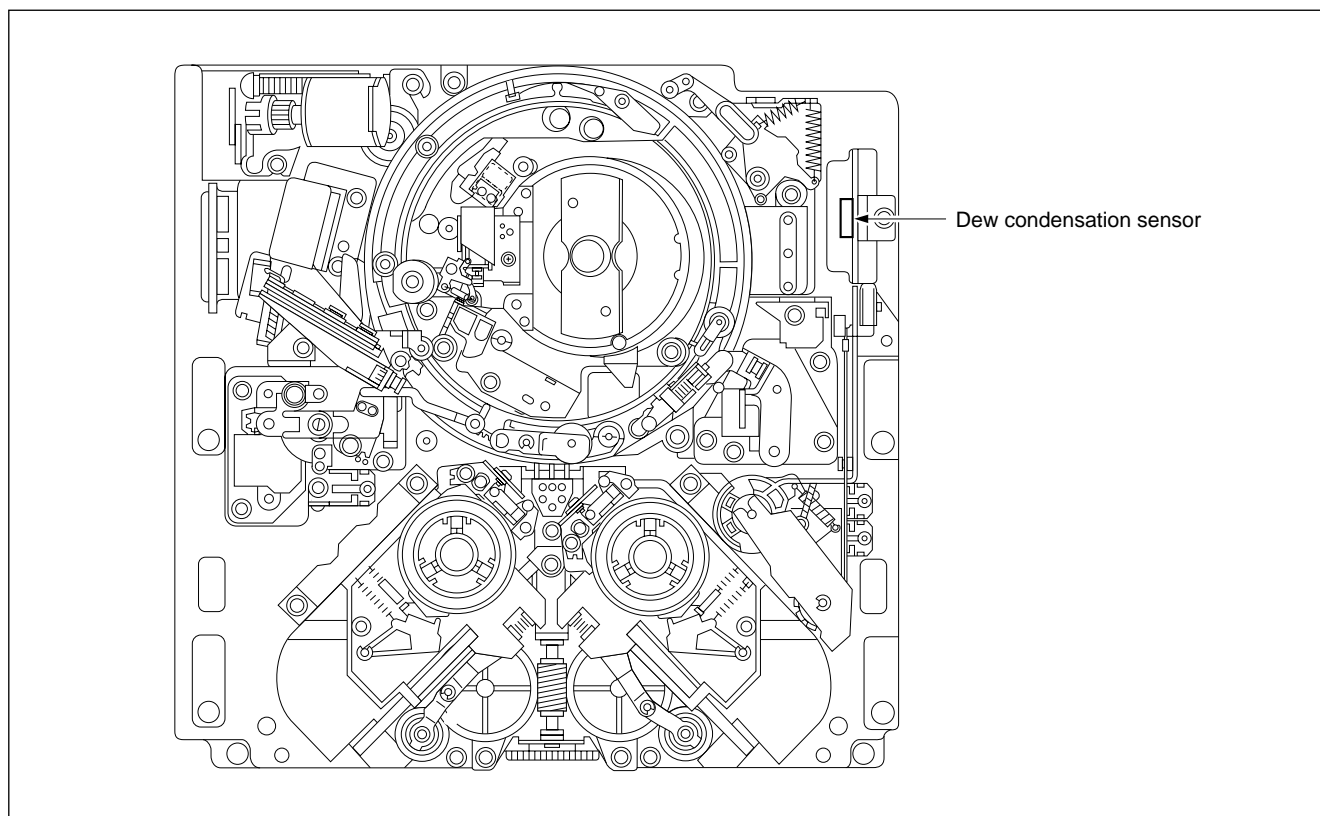
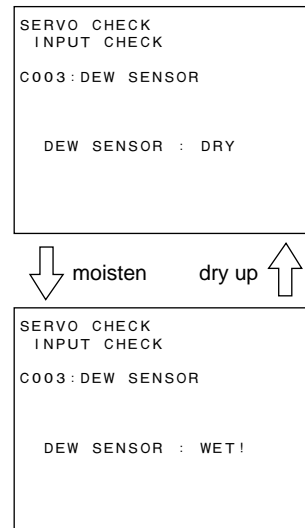
## C003 : DEW SENSOR

This submenu checks the function of a dew condensation sensor.

- (1) Slightly touch the sensor with the cotton swab moistened with water.
  - Confirm that the “DRY” characters change to “WET!”.
- (2) Wipe the sensor with a dry cotton swab to eliminate the moisture or evaporate moisture completely using a blower.
  - Confirm that the “WET!” characters return to “DRY”.
- (3) Press the MENU button when terminating the check.

### In case of NG

- Check the sensor itself.
- Check the detection circuit (on the MS-50 board).
- Check the sensor input port of MPU (IC1 on the MS-50 board).



Location of Dew Condensation Sensor



**C010 : S REEL MOTOR**  
**C011 : T REEL MOTOR**

These menus check the function of an S reel motor or T reel motor.

- (1) Turn the search dial (JOG mode) in FORWARD (↻) or REVERSE (↺) direction.  
Confirm that the reel table rotates in the specified direction at a fixed speed (about one turn per second) after the reel brake is released.

Search dial	Rotation direction of reel table
FORWARD (↻)	Clockwise (↻)
REVERSE (↺)	Counterclockwise (↺)

- (2) Stop the rotation of the search dial and confirm that the reel table stops and that the reel brake operates.
- (3) Press the MENU button when terminating the check.

SERVO CHECK  
MOTOR CHECK  
C010:S REEL MOTOR

TURN JOG DIAL  
IN JOG MODE

SERVO CHECK  
MOTOR CHECK  
C011:T REEL MOTOR

TURN JOG DIAL  
IN JOG MODE

**In case of NG**

When the reel table operation is defective

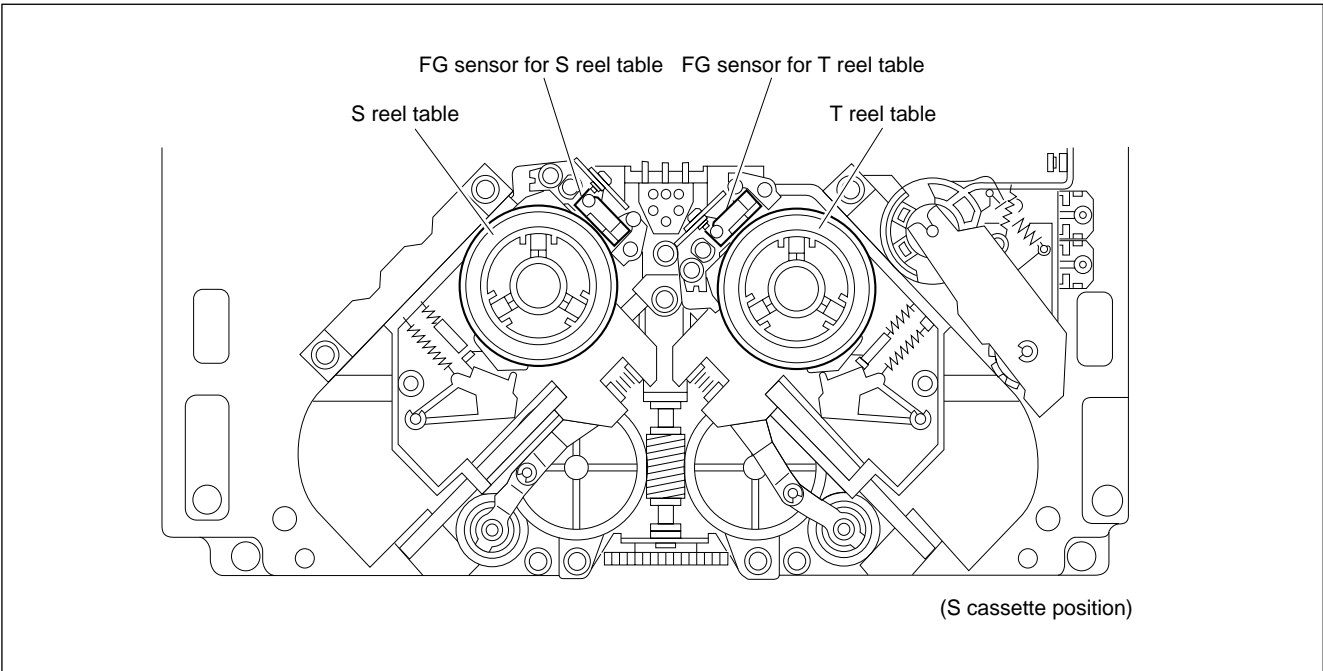
- Check the reel motor drive circuit (on the DR-315 board).
- Check the reel motor.

When the reel table is not constant at a rotation speed

- Adjust the duty ratio of an S/T reel FG. (A001/A002)
- Check the FG output from a reel table FG sensor (DME on the SE-344 board).
- Check the reel FG shaping circuit (on the MS-50 board).

When the brake solenoid operation is defective

- Check the S/T brake solenoid. (C021/C022)



**Locations of Reel Table FG Sensors**

## C012 : THREADING MOTOR

This menu checks the functions of a threading motor and threading end sensor/  
unthreading end sensor.

- (1) Turn the search dial (JOG mode) slowly in FORWARD (↻) direction.
  - Confirm that the threading motor rotates and that the threading ring rotates counterclockwise (↻) and stops in the threading end state.
  - Confirm that the superimpose picture display changes as described below.  
UNTHREAD END ⇒ ..... ⇒ THREAD END

### Note

The threading motor also stops when the rotation of the search dial stops.

- (2) Turn the search dial (JOG mode) slowly in REVERSE (↻) direction.
  - Confirm that the threading motor rotates and that the threading ring rotates clockwise (↻) and stops in the unthreading end state.
  - Confirm that the superimpose picture display changes as described below.  
THREAD END ⇒ ..... ⇒ UNTHREAD END

### Note

The threading motor also stops when the rotation of the search dial stops.

- (3) To terminate the check, return to the unthreading end state and press the MENU button.

### Note

Message “SET UNTHREAD END TO RETURN” is displayed if the threading ring is not in the unthreading end state when the MENU button is pressed.

## In case of NG

When the threading ring (threading motor) operation is defective

- Confirm that no mechanical abnormality exists.
- Check the threading motor drive circuit (on the DR-315 board).
- Check the threading motor.

When the superimpose picture does not display the threading end state or unthreading end state even if the threading ring is in the threading end state or unthreading end state

- Check the threading end sensor and unthreading end sensor (on the TR-79 board).
- Check the sensor input port of MPU (IC1 on the MS-50 board).

```
SERVO CHECK
MOTOR CHECK
C012: THREADING MOTOR

*** UNTHREAD END ***

TURN JOG DIAL
IN JOG MODE
FWD: THREAD, REV: UNTH
```



```
SERVO CHECK
MOTOR CHECK
C012: THREADING MOTOR

.....

TURN JOG DIAL
IN JOG MODE
FWD: THREAD, REV: UNTH
```



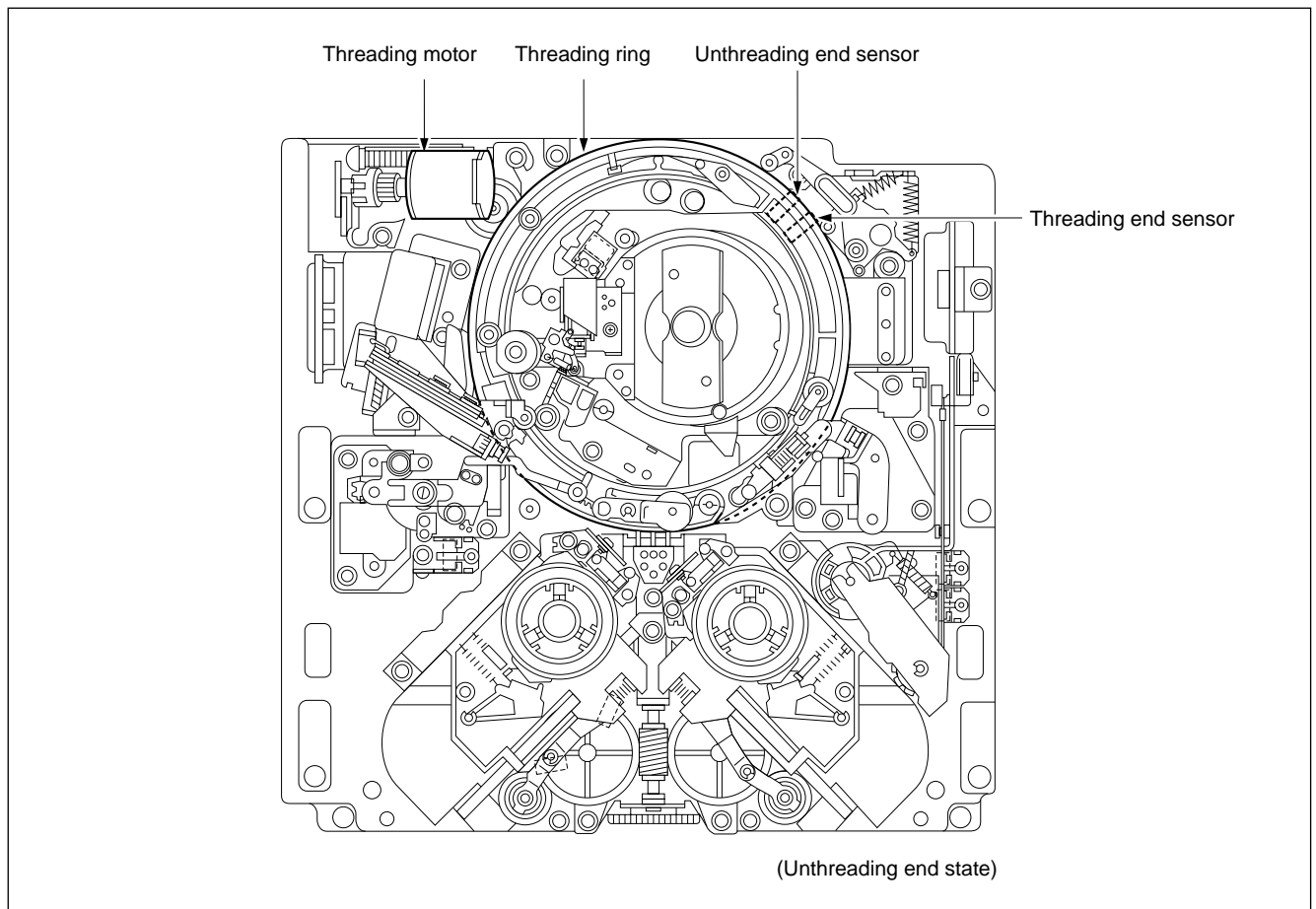
```
SERVO CHECK
MOTOR CHECK
C012: THREADING MOTOR

*** THREAD END ***

TURN JOG DIAL
IN JOG MODE
FWD: THREAD, REV: UNTH
```

```
SERVO CHECK
MOTOR CHECK
C012: THREADING MOTOR

*** THREAD END ***
# SET UNTHREAD END #
# TO RETURN #
TURN JOG DIAL
IN JOG MODE
FWD: THREAD, REV: UNTH
```



**Locations of Threading End and Unthreading End Sensors**

## C013 : CASSETTE COMP.

This menu checks the functions of a cassette compartment motor and cassette-down sensor.

### CAUTION

Be careful not to execute this menu with the foreign matter put into the cassette compartment.

Remove it when a cassette tape is located in the cassette insertion slot. The cassette is caught halfway when this menu is executed in this state.

### Note

- “HORIZ.” or “VERT.” is displayed when this menu is selected in the state where the cassette compartment has stopped halfway due to abnormality.
- The power supply to the motor stops to protect the motor and movable part when the driving time of a motor continuously exceeds about six seconds due to abnormality.

- (1) Press the SET button when “UP” is displayed.
  - Confirm that the compartment goes down.
  - Confirm that the screen display of the video monitor changes as described below.  
UP ⇒ HORIZ. ⇒ VERT. ⇒ DOWN

- (2) Press the SET button when “DOWN” is displayed.
  - Confirm that the compartment goes up.
  - Confirm that the screen display of the video monitor changes as described below.  
DOWN ⇒ VERT. ⇒ HORIZ. ⇒ UP

- (3) Press the MENU button when terminating the check.

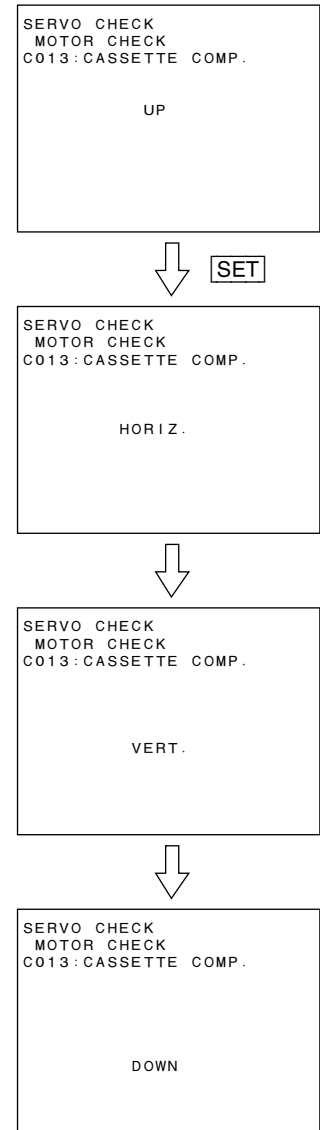
### In case of NG

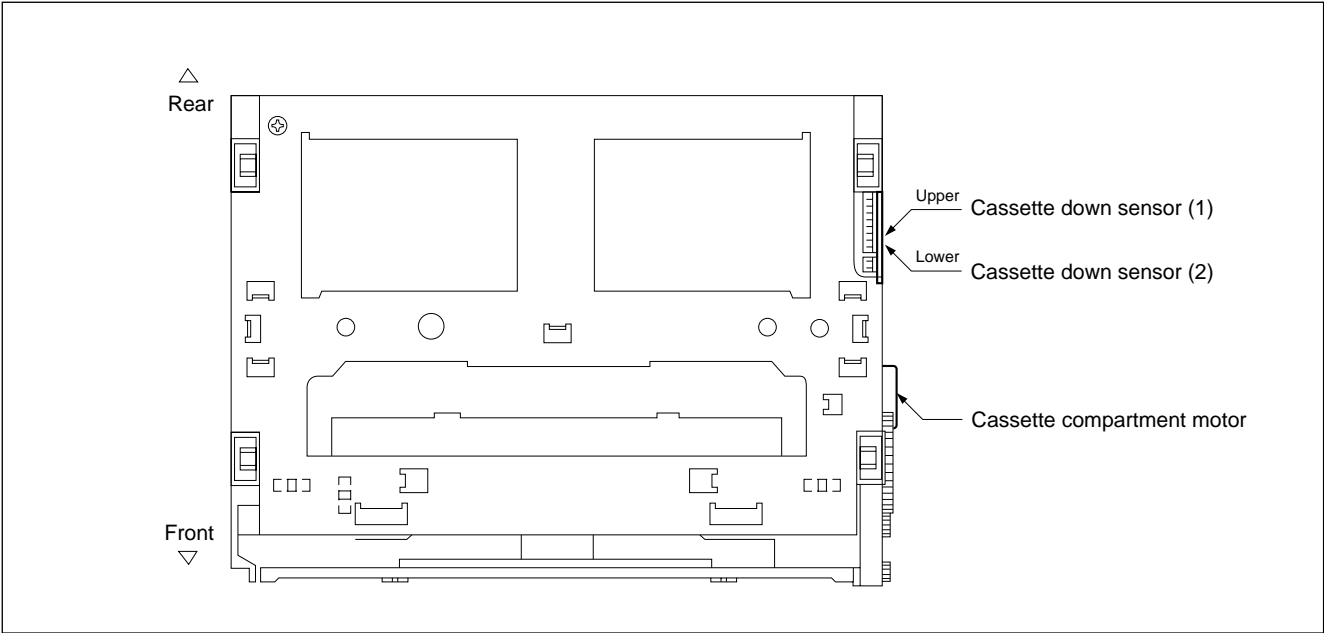
When the compartment operation is defective

- Confirm that no mechanical abnormality exists.
- Check the motor drive circuit of the cassette compartment (on the DR-315 board).
- Check the cassette compartment motor.

When the actual compartment position does not coincide with the display on the superimpose picture

- Check the cassette-down sensor (on the CL-29 board).
- Check the sensor input port of MPU (IC1 on the MS-50 board).





Top View of Cassette Compartment

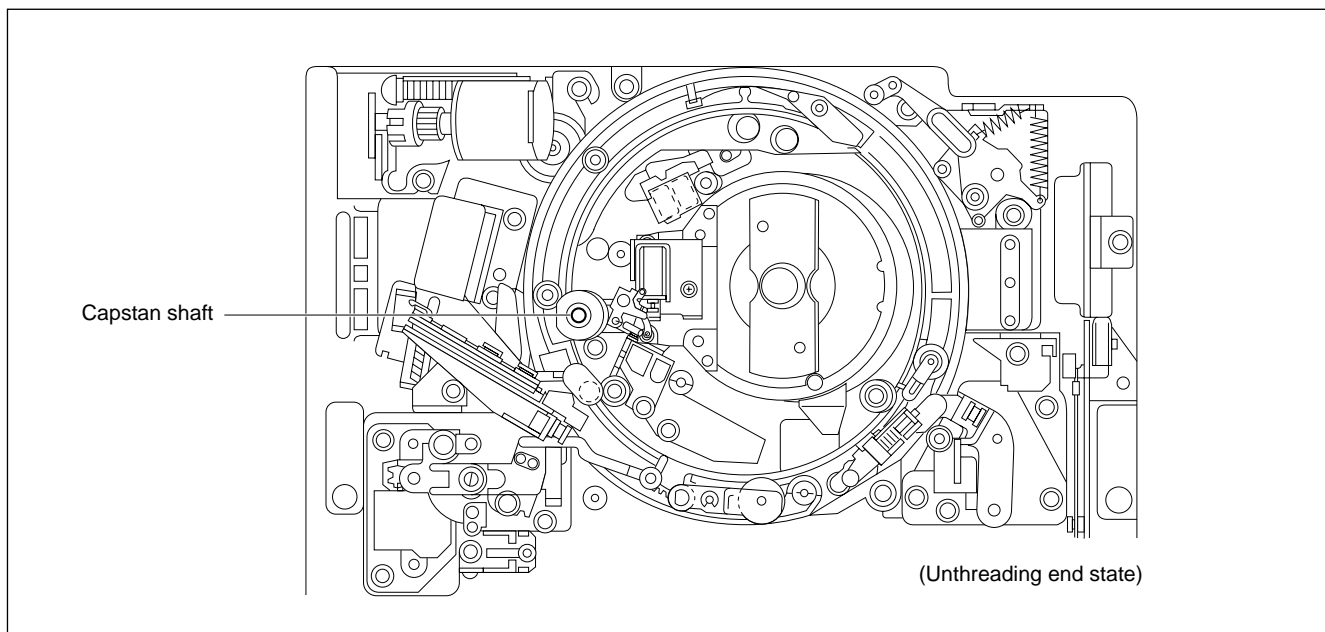
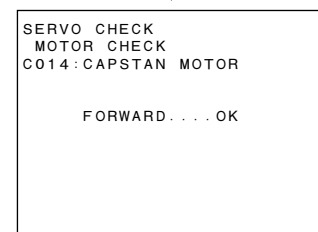
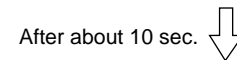
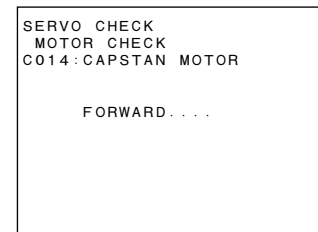
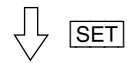
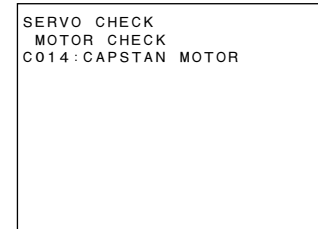
## C014 : CAPSTAN MOTOR

This menu checks the function of a capstan motor.

- (1) Press the SET button.
  - Confirm that the capstan shaft rotates in the forward (↻) direction.
  - Confirm that message “FORWARD....OK” is displayed on the superimpose picture and that the capstan shaft stops.
- (2) Press the SET button again.
  - Confirm that the capstan shaft rotates in the reverse (↻) direction.
  - Confirm that message “REVERSE....OK” is displayed on the superimpose picture and that the capstan shaft stops.
- (3) Press the MENU button when terminating the check.

### In case of NG

- Confirm that no mechanical abnormality exists.
- Check the capstan motor drive circuit (on the DR-315 board).
- Check the FG output from a capstan motor.
- Check the capstan FG shaping circuit (on the MS-50 board).
- Check each circuit that processes the capstan FG on the SS-63 board.
- Check the capstan motor.



Location of Capstan Shaft

## C015 : DRUM MOTOR

This menu checks the function of a drum motor.

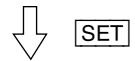
- (1) Press the SET button.
  - Confirm that the drum rotates.
  - Confirm that the superimpose picture display changes as shown on the right.
- (2) Press the MENU button when terminating the check.
  - Confirm that the drum stops.

### In case of NG

- Confirm that no mechanical abnormality exists.
- Check the drum motor drive circuit (on the DR-315 board).
- Check the FG and PG outputs from a drum motor.
- Check the drum FG/PG shaping circuit (on the DR-315 board).
- Check each circuit that processes the drum FG/PG on the SS-63 board.

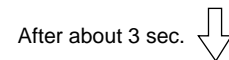
```
SERVO CHECK
MOTOR CHECK
C015:DRUM MOTOR

SPEED :
PHASE :
PG :
```



```
SERVO CHECK
MOTOR CHECK
C015:DRUM MOTOR

SPEED :      NG
PHASE :      UNLOCK
PG :         NO EXIST
```



```
SERVO CHECK
MOTOR CHECK
C015:DRUM MOTOR

SPEED :      OK
PHASE :      LOCK
PG :         EXIST
```

## C016 : REEL SHIFT MOTOR

This menu checks the functions of a reel shift motor and reel position sensor.

### Note

The power supply to the motor stops to protect the motor and movable part when the driving time of a motor continuously exceeds about six seconds due to abnormality.

- (1) Press the SET button when S-POSITION is displayed.
  - Confirm that the reel shift motor rotates and that the reel table moves from the S position (S cassette position) to the L position (L cassette position).
  - Confirm that the superimpose picture display changes as described below.  
S-POSITION ⇒ ..... ⇒ L-POSITION
- (2) Press the SET button when L-POSITION is displayed.
  - Confirm that the reel shift motor rotates and that the reel table moves from L position (L cassette position) to the S position (S cassette position).
  - Confirm that the superimpose picture display changes as described below.  
L-POSITION ⇒ ..... ⇒ S-POSITION

- (3) Press the MENU button when terminating the check.

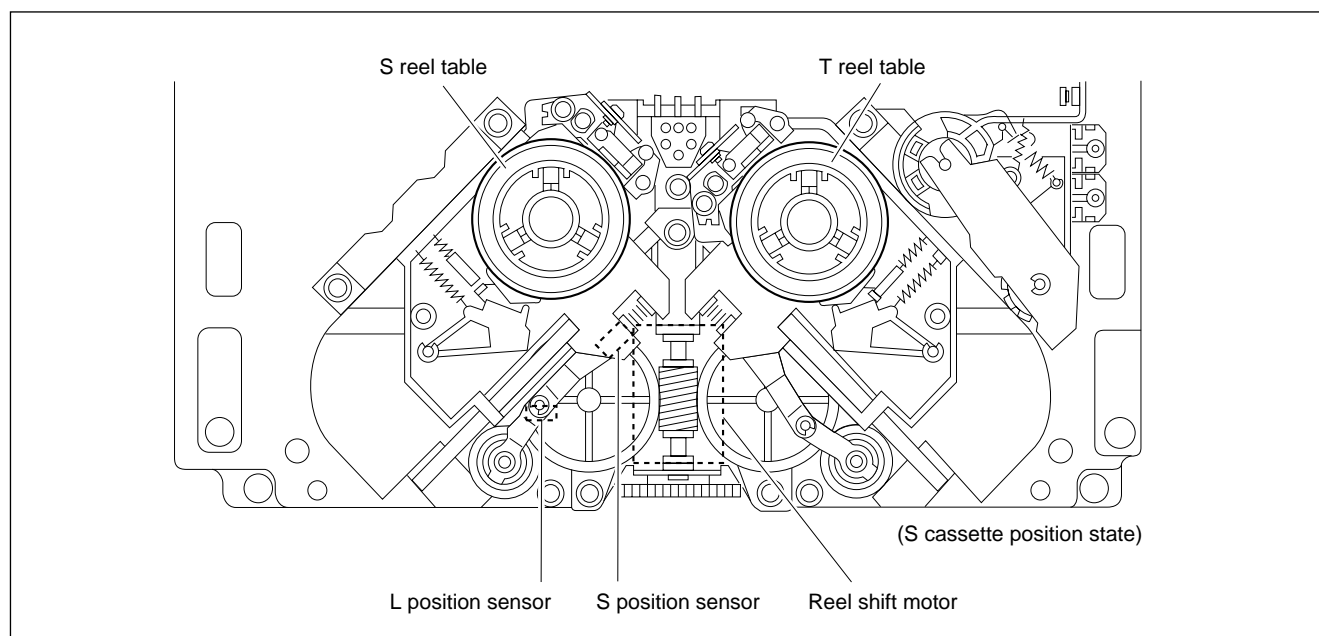
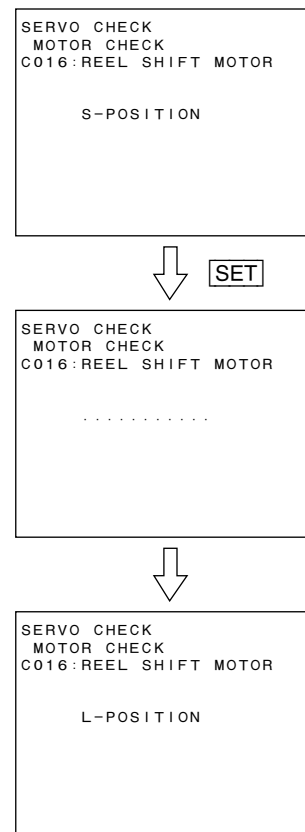
### In case of NG

When the reel table (reel shift motor) operation is defective

- Confirm that no mechanical abnormality exists.
- Check the drive circuit of the reel shift motor (on the DR-31S board).
- Check the reel shift motor.

When the superimpose picture does not display the S or L position state even if the reel table is in the S position (S cassette position) or L position (L cassette position)

- Check the S and L position sensors (on the PTC-71 board).
- Check the sensor input port of MPU (IC1 on the MS-50 board).



Locations of S and L Position Sensors and Reel Shift Motor



## C020 : PINCH ROLLER

This menu checks the function of a pinch roller solenoid.

- (1) Press the SET button.
  - Confirm that the pinch lever comes near a capstan and makes sound when the pinch roller solenoid is turned on.
- (2) Press the MENU button.
  - The drive voltage of the pinch roller solenoid is turned off and the check menu is terminated.
- (3) Slightly push the pinch lever toward the pinch roller solenoid with fingers.

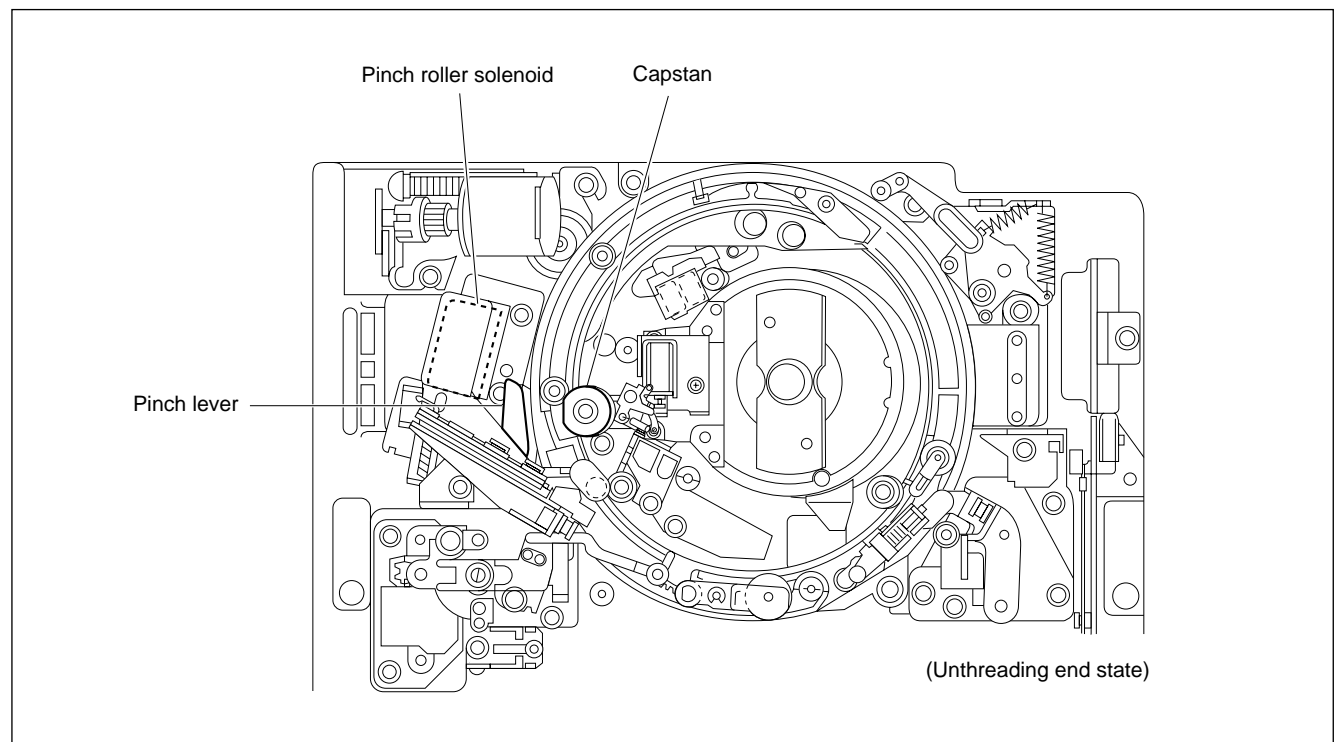
### Note

The sound when the pinch roller solenoid is turned on is not generated even if the SET button is pressed in this menu with the iron core is not returned to the former position.

### In case of NG

- Confirm that no mechanical abnormality exists.
- Check the drive circuit of the pinch roller solenoid (on the DR-315 board).
- Check the pinch roller solenoid itself.

SERVO CHECK  
PLUNGER SOLENOID  
C020 : PINCH ROLLER



Locations of Pinch Roller Solenoid and Pinch Lever

## C021 : S REEL BRAKE

## C022 : T REEL BRAKE

These menus check the function of an S or T reel brake solenoid.

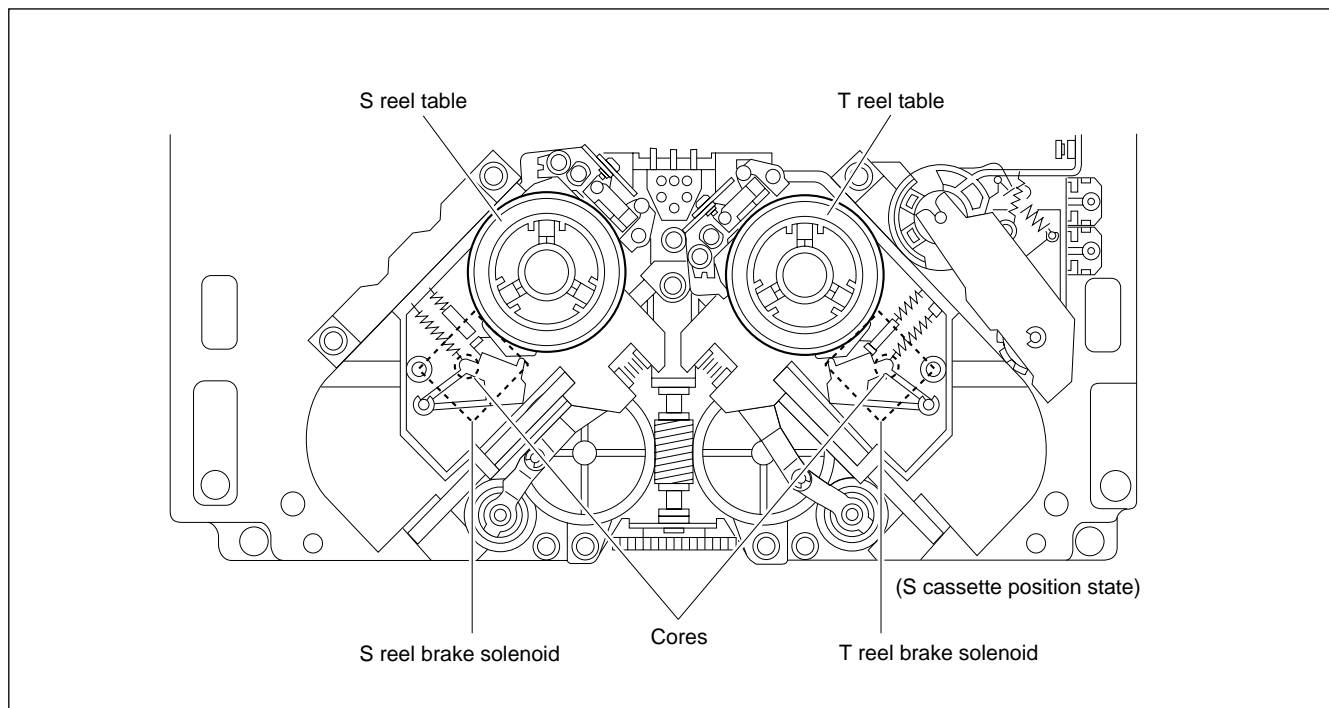
- (1) Press the SET button.
  - Confirm with sound that the reel brake solenoid is turned on. (The reel table can be lightly turned with hand because the brake is in the OFF state.)
- (2) Press the MENU button.
  - The check menu is terminated.
  - Confirm by the brakes applied to the reel table that the reel brake solenoid was turned off.

SERVO CHECK  
PLUNGER SOLENOID  
C021: S REEL BRAKE

SERVO CHECK  
PLUNGER SOLENOID  
C022: T REEL BRAKE

### In case of NG

- Confirm that no mechanical abnormality exists.
- Check the drive circuit of the reel brake solenoid (on the DR-315 board).
- Check the reel brake solenoid itself.



Locations of Reel Brake Solenoids

## C023 : CLEANING ROLLER

This menu checks the function of a cleaning roller solenoid.

(1) Press the SET button.

- Confirm that the cleaning roller solenoid operates and that the cleaning roller momentarily touches the drum and is immediately released from it.

### CAUTION

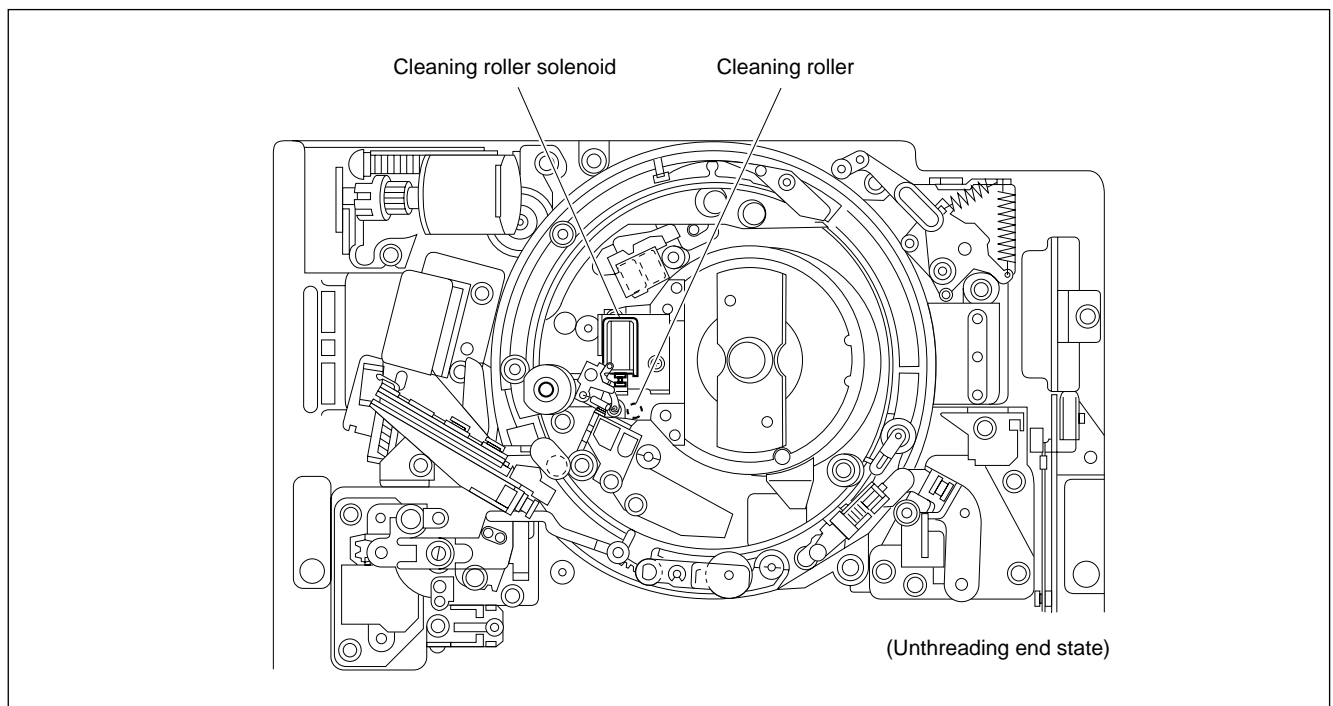
The cleaning roller solenoid causes burning when it remains on. If the cleaning roller is not away from the drum, turn off the power immediately.

(2) Press the MENU button when terminating the check.

### In case of NG

- Confirm that no mechanical abnormality exists.
- Check the drive circuit of the cleaning roller solenoid (on the DR-315 board).
- Check the cleaning roller solenoid itself.

SERVO CHECK  
PLUNGER SOLENOID  
C023 : CLEANING ROLLER



Locations of Cleaning Roller and Cleaning Roller Solenoid

## C03 : REEL/CAPSTAN MOTOR & FG CHECK

This menu checks the following items automatically and continuously.

- S reel FG duty ratio (C031 : S REEL FG/MOTOR CHECK)
- T reel FG duty ratio (C032 : T REEL FG/MOTOR CHECK)
- Capstan FG duty ratio (C033 : CAPSTAN FG/MOTOR CHECK)
- S reel offset/friction level (C034 : S REEL OFFSET/FRICTION)
- T reel offset/friction level (C035 : T REEL OFFSET/FRICTION)
- S reel motor torque (C036 : S REEL MOTOR TORQUE)
- T reel motor torque (C037 : T REEL MOTOR TORQUE)

- (1) Select C03 in the servo check mode and press the SET button to start the check.
  - The item name to be checked is displayed on the superimpose picture, and the menu number (C031 to C037) is displayed in a time data display area.
- (2) Confirm that all checks are completed and that message “CHECK COMPLETE” is displayed.  
If message “# CHECK INCOMPLETE #” is displayed halfway, refer to the NG cases during check below.
- (3) Press the MENU button to return to the selection of the servo check mode.

### For NG during (C031) S REEL FG/MOTOR CHECK

Perform the S reel motor check (C010). If no abnormality is found in the motor or its drive circuit, perform the S reel FG duty adjustment (A001).

### For NG during (C032) T REEL FG/MOTOR CHECK

Perform the T reel motor check (C011). If no abnormality is found in the motor or its drive circuit, perform the T reel FG duty adjustment (A002).

### For NG during (C033) CAPSTAN FG/MOTOR CHECK

Perform the capstan motor check (C014). If no abnormality is found in the motor or its drive circuit, perform the capstan FG duty adjustment (A003).

### For NG during (C034) S REEL OFFSET/FRICTION

Perform the S reel motor check (C010). If no abnormality is found in the motor or its drive circuit, perform the S reel offset/friction adjustment (A004).

### For NG during (C035) T REEL OFFSET/FRICTION

Perform the T reel motor check (C011). If no abnormality is found in the motor or its drive circuit, perform the T reel offset/friction adjustment (A005).

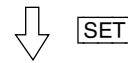
### For NG during (C036) S REEL MOTOR TORQUE

Perform the S reel motor check (C010). If no abnormality is found in the motor or its drive circuit, perform the S reel torque adjustment (A006).

### For NG during (C037) T REEL MOTOR TORQUE

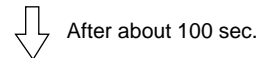
Perform the T reel motor check (C011). If no abnormality is found in the motor or its drive circuit, perform the T reel torque adjustment (A007).

```
SERVO CHECK
*COO: INPUT CHECK
C01: MOTOR CHECK
C02: PLUNGER SOL. CHECK
C03: REEL/CAPSTAN MOTOR
    & FG CHECK
```



```
SERVO CHECK
REEL/CAPSTAN MOTOR
& FG CHECK

S REEL FG/MOTOR CHECK
CHECKING...
```



```
SERVO CHECK
REEL/CAPSTAN MOTOR
& FG CHECK

CHECK COMPLETE
```



```
SERVO CHECK
*COO: INPUT CHECK
C01: MOTOR CHECK
C02: PLUNGER SOL. CHECK
C03: REEL/CAPSTAN MOTOR
    & FG CHECK
```

(Ex. of NG)

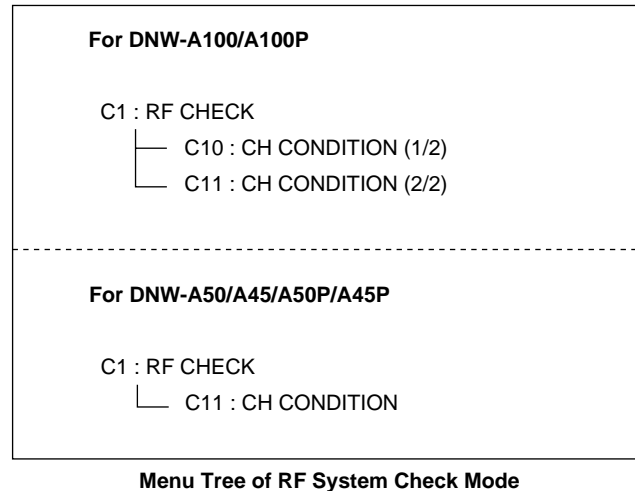
```
SERVO CHECK
REEL/CAPSTAN MOTOR
& FG CHECK

S REEL FG/MOTOR CHECK
# CHECK INCOMPLETE #
```

### 4-2-3. RF CHECK Mode (C1)

The C1 : RF CHECK mode is used to check the PB RF system based on an Betacam SX format.

Two menus are available for DNW-A100/A100P, and one menu is available for DNW-A50/A45/A50P/A45P.



#### C10 : CH CONDITION (1/2)

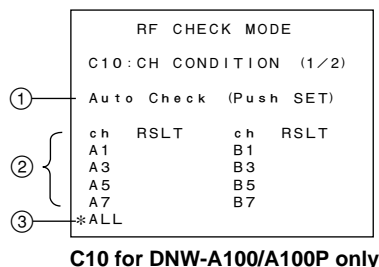
..... (For DNW-A100/A100P only)

#### C11 : CH CONDITION (2/2)

..... (For DNW-A100/A100P)

#### C11 : CH CONDITION

.... (For DNW-A50/A45/A50P/A45P)



RF CHECK MODE			
C11:CH CONDITION (2/2)			
Auto Check (Push SET)			
ch	RSLT	ch	RSLT
A2		B2	
A4		B4	
A6		B6	
A8		B8	
*ALL			

**C11 for DNW-A100/A100P**

RF CHECK MODE			
C11:CH CONDITION			
Auto Check (Push SET)			
ch	RSLT	ch	RSLT
A2		B2	
A4		B4	
A6		B6	
A8		B8	
*ALL			

**C11 for DNW-A50/A45/A50P/A45P**

In these menus, the error condition for each channel is displayed in three steps (GRN, YEL, and RED) when the tape recorded based on a Betacam SX format is played back by tracking.

- C10 checks using the PB signal from the PB heads in A1, A3, A5, A7, B1, B3, B5, and B7 channels. This menu is used exclusively for DNW-A100/A100P. It is not displayed for DNW-A50/A45/A50P/A45P.
- C11 checks using the PB signal from the PB heads in A2, A4, A6, A8, B2, B4, B6, and B8 channels.

#### Notes

- During normal operation, the tape is played back by non-tracking. Therefore, the condition for each channel cannot be confirmed using a CH CONDITION indicator.
- If abnormality exists in the servo system of a VTR, each menu of C1 : RF CHECK does not function normally.

#### Description of superimpose picture

- ① The display in this line changes. Each display and its meaning are described below.  
Auto Check (Push SET) : Press the SET button to start the check.  
Insert SR5-1 : Insert an alignment tape.  
Auto Tracking... : Tracking is in an optimization process.  
Auto Checking... : Check is in progress.  
Auto Check Complete : Check is completed.  
Auto Check Failure : Check failure  
Condition NG : Error condition defect
- ② Select using an \* mark when checking the condition for each channel.  
After the check is completed, the condition (GRN, YEL, or RED) is displayed on the right of a channel name. "RED" is displayed even if the check fails.

#### Note

"RSLT" indicates the result.

- ③ Select ALL when checking the condition for all channels.  
During check, the condition in each channel is displayed in area ②.  
After the check for all channels is completed, "GRN" is also displayed on the right of ALL if the condition for all channels is GRN. If there is at least one channel whose condition is YEL or RED, the worst condition is displayed on the right of ALL.

### To execute the check

- (1) Insert the cassette tape recorded by a Betacam SX format.

#### Notes

- The tape amount on the recorded portion that is played back after a cassette tape is inserted must exceed the check execution time.  
The check execution time for each channel is usually about ten seconds and about 80 seconds in an ALL check.
  - Usually, use alignment tape SR5-1 (for a 525/60 system) or SR5-1P (for a 625/50 system).
- (2) Turn the search dial and move the \* mark to the channel to be checked or ALL.
- Usually, select ALL.
- (3) Press the SET button.
- The tape is automatically played back in the PLAY mode. The check is then initiated.
  - Message “Auto Tracking ...” or “Auto Checking ...” is displayed on the superimpose picture.  
During ALL check execution, the check result in the channel is displayed every time a one-channel check is completed.  
The time data display area displays an ordinary time counter.
  - To cancel the check, press the MENU button.

#### Notes

- Message “Insert SR5-1” is displayed on the superimpose picture when no cassette tape is inserted. The tape is automatically played back in the PLAY mode when a cassette tape is inserted. The check is then initiated.
- If message “Auto Check (Push SET)” is continuously displayed on the superimpose picture, the non-recorded portion on the tape is judged to be played back from the beginning. Change the playback position on the tape.
- Check cannot be properly performed in modes other than PLAY mode. Leave the check as it is until automatic check is completed. If modes other than PLAY mode are entered, the check cannot be performed any longer or the condition becomes “RED”.

- (4) Confirm the check result on the superimpose picture.
- If no abnormality is found, “GRN” is displayed on the right of the selected channel or ALL.
  - Refer to the “For Check Failure” on page 4-35 when message “Auto Check Failure” is displayed on the superimpose picture.
  - Refer to the “For Condition NG” on page 4-34 when message “Condition NG” is displayed on the superimpose picture or when conditions other than “GRN” are displayed on the right of the checked channel.

#### Notes

- Refer to the “For Check Failure” on page 4-35 when the check result in all channels is “RED” even if message “Condition NG” is displayed on the superimpose picture during ALL check execution.
  - “GRN”, “YEL”, or “RED” is displayed in a time data display area. In only the time data display area, it cannot be confirmed whether the condition is NG or check failure when it is “RED”.  
The check result for each channel is displayed when the search dial is turned after performing ALL check.
- (5) Press the MENU button when terminating the menu.  
To execute the check again in this menu, return to step (2).

#### Note

To change the playback tape before starting the check, press the SET button while pressing the EJECT button. The tape is then ejected without influencing the check result. Insert another tape and press the PLAY button. The check is then initiated. This operation does not coincide with the message on the superimpose picture.

Example of display and operation  
ALL is selected in C11 : CH CONDITION (2/2) for DNW-  
A100/A100P.

Superimpose picture

RF CHECK MODE

C11:CH CONDITION (2/2)

Auto Check (Push SET)

ch	RSLT	ch	RSLT
A2		B2	
A4		B4	
A6		B6	
A8		B8	
*ALL			

Time data display area

C11-ALL

(continued)

RF CHECK MODE

C11:CH CONDITION (2/2)

Auto Check Complete

ch	RSLT	ch	RSLT
A2	GRN	B2	GRN
A4	GRN	B4	GRN
A6	GRN	B6	GRN
A8	GRN	B8	GRN
*ALL GRN			

C11-ALL GRN

- (1) ↓ Insert SR5-1/SR5-1P
- (2) ↓ Select
- (3) ↓ SET

- (4) ↓ Confirm
- (5) ↓ MENU

RF CHECK MODE

C11:CH CONDITION (2/2)

Auto Tracking ...

ch	RSLT	ch	RSLT
A2		B2	
A4		B4	
A6		B6	
A8		B8	
*ALL			

RF CHECK MODE

C11:CH CONDITION (2/2)

Auto Checking ...

ch	RSLT	ch	RSLT
A2		B2	
A4		B4	
A6		B6	
A8		B8	
*ALL			

RF CHECK MODE

C11:CH CONDITION (2/2)

Auto Check Complete

ch	RSLT	ch	RSLT
A2	GRN	B2	
A4		B4	
A6		B6	
A8		B8	
*ALL			

RF CHECK MODE

C11:CH CONDITION (2/2)

Auto Tracking ...

ch	RSLT	ch	RSLT
A2	GRN	B2	
A4		B4	
A6		B6	
A8		B8	
*ALL			

(omitted)

(continue)

---

## For Condition NG

Confirm, recheck, and clean the drum (video heads) according to the procedures below.

- (1) If a check is performed using alignment tapes other than SR5-1/SR5-1P, recheck using alignment tape SR5-1/SR5-1P.

If no abnormality is found, the check is completed.

### Note

If no abnormality is found during check using an alignment tape, a trouble (tape is damaged or recording is not done properly) is considered to exist in the previously played back tape.

- (2) Change the playback portion on the alignment tape, then recheck.

If no abnormality is found, the recheck is completed.

- (3) Recheck using an alignment tape after cleaning using a cleaning tape (in Section 5-2-1).

If no abnormality is found, the recheck is completed.

- (4) Recheck using an alignment tape after cleaning using a cleaning tape again (the amount of the tape used is 15 seconds).

If no abnormality is found, the recheck is completed.

- (5) Recheck using an alignment tape after cleaning the video heads with cleaning cloth referring to Sections 5-2-2 and 5-2-3.

If no abnormality is found, the recheck is completed.

If the error condition is not improved in the way mentioned above, the possible cause below are considered.

- VTR's servo system adjustment defect or circuit defect
  - ⇒ Readjust the servo system. (A0 : SERVO ADJUST)
  - ⇒ Check the servo system. (C03 : REEL/CAPSTAN MOTOR & FG CHECK)
- RF system adjustment defect
  - ⇒ Readjust the RF system. (A1 : RF ADJUST)
- Worn PB head in the drum assembly
  - ⇒ After confirming the hours meter (H02 : DRUM RUNNING HOURS), replace the upper drum assembly as required.  
(Refer to the maintenance manual part 2, volume-1.)
- Adjustment defect in tape transport system or component part installation defect
  - ⇒ Readjust the tape transport system or reinstall the parts.  
(Refer to the maintenance manual part 2, volume-1.)
- EQ-56 board defect
- Drum assembly defect



## For Check Failure

Change the playback portion on the tape, then recheck.  
If no check failure occurs again, a trouble is considered to exist in the previously played back portion.

### Confirmation of cassette tape

Check failure occurs if the no-recorded portion is played back or the recording format is not in Betacam SX.  
Moreover, check failure will also occur on the tape recorded by the failed Betacam SX VTR. Confirm that the tape can be correctly played back by the other normal operating Betacam SX VTR.

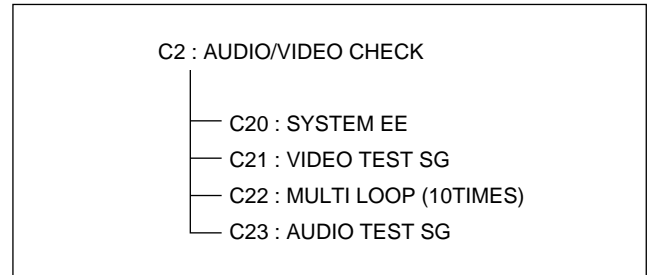
### If no trouble is found on the played back tape

The possible cause below are considered.

- Heads clogging
  - ⇒ Perform steps (1) to (5) of “For Condition NG” on previous page.
- VTR’s servo system adjustment defect or circuit defect
  - ⇒ Readjust the servo system. (A0 : SERVO ADJUST)
  - ⇒ Check the servo system. (C03 : REEL/CAPSTAN MOTOR & FG CHECK)
- Brush slip ring assembly defect or its part installation/connection defect
  - ⇒ Replace or reinstall the brush slip ring assembly. (Refer to the maintenance manual part 2, volume-1.)
- Harness (between EQ-56 board and drum assembly) connection defect
- RF system adjustment defect
  - ⇒ Readjust the RF system. (A1 : RF ADJUST)
- EQ-56 board defect
- Drum assembly defect

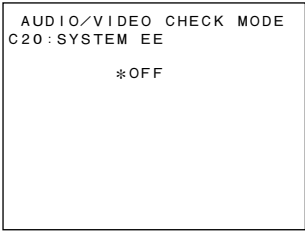
## 4-2-4. AUDIO/VIDEO CHECK Mode (C2)

The C2 : AUDIO/VIDEO CHECK mode has four menus that are useful for checking audio and video systems.



Menu Tree of Audio/Video Systems Check Mode

C20 : SYSTEM EE



This menu selects the system E-E function to be enabled or disable in the maintenance mode, and additionally selects a signal path from among the followings when the system E-E function is enabled.

- OFF: Normal state (in which the system E-E state is not entered)
- BRR-EE: Reflects the signal immediately before it is input to IC402 (ECC encoder) on the DPR-71 board.
- ECC-EE: Reflects the signal after it passes through IC402 (ECC encoder) on the DPR-71 board.
- RF-EE: Reflects a signal in the EQ-56 board.

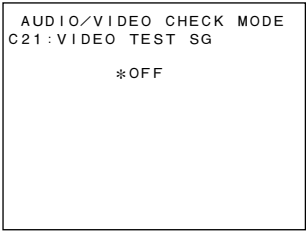
System E-E setting

To set the system E-E function, turn the search dial while pressing the JOG button and display the desired setting. The specified setting is maintained until the maintenance mode is terminated or the setting is changed.

Notes

- This menu is set to OFF when the maintenance mode is activated.
- Be sure to perform under the next state when selecting the system E-E to enable:  
No cassette tape  
PLAYER device: EXT  
RECORDER device: TAPE

C21 : VIDEO TEST SG



This menu selects the operation in the maintenance mode of a video test signal generator incorporated into this unit.

- OFF: The video test signal generator operation stops.
- Except OFF: A video test signal generator outputs the selected signals (below).
- |                         |                          |
|-------------------------|--------------------------|
| 100% color bars         | 75% color bars           |
| 75% reverse color bars  |                          |
| Bowtie                  | Pulse and bar            |
| Multi-burst             | H sweep                  |
| 5-step                  | Ramp                     |
| Shallow ramp            | Red signal               |
| 50% flat                | 100% flat                |
| Black burst             |                          |
| Pathological check code |                          |
| NTC7 (NTSC)             | ⇐ Only for 525/60 system |
| Line330 (625)           | ⇐ Only for 625/50 system |



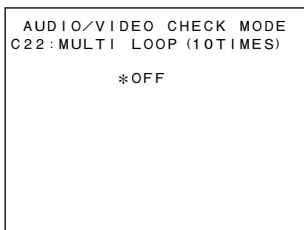
Setting of video test signal generator

To set the video test signal generator, turn the search dial while pressing the JOG button and display the desired setting. This setting is valid until the maintenance mode is terminated. However, the C21 : VIDEO TEST SG setting is reset to OFF when the C22 : MULTI LOOP (10TIMES) setting is changed.

Notes

- This menu is set to OFF when the maintenance mode is activated.
- The output signal of a test signal generator can also be recorded on the tape or hard disk. In this case, press the SET button and perform the recording operation with the white square is displayed in the upper-right position of the superimpose picture.
- The test signal generator does not function when TAPE is set as the PLAYER device and when DISK is set as the RECORDER device.

## C22 : MULTI LOOP (10TIMES)



This menu selects the multi-loop function enabled or disabled in the maintenance mode, and additionally selects a video test signal when the multi-loop function is enabled. The video test signal that can be selected is output from an internal video test signal generator. The video test signal is the same in type as one described in a C21 : VIDEO TEST SG menu.

**OFF:** Normal state (in which no multi-loop operation is performed)

**Except OFF:** The selected signal is output from a video test signal generator for multi-loop operation.

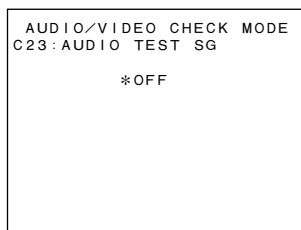
### Multi-loop function setting

To set the multi-loop function, turn the search dial while pressing the JOG button and display the desired setting. This setting is valid until the maintenance mode is terminated. However, the C22 : MULTI LOOP (10TIMES) setting is reset to OFF when the C21 : VIDEO TEST SG setting is changed.

#### Notes

- This menu is set to OFF when the maintenance mode is activated.
- The output signal during multi-loop operation can also be recorded on the tape or hard disk. In this case, press the SET button and perform the recording operation with the white square is displayed in the upper-right position of the superimpose picture.
- The test signal generator does not function when TAPE is set as the PLAYER device and when DISK is set as the RECORDER device.

## C23 : AUDIO TEST SG



This menu selects the operation in the maintenance mode of an audio test signal generator incorporated in this unit.

**OFF:** The audio test signal generator operation stops.

**Except OFF:** An audio test signal generator outputs the selected signals (below).

Silence  
1 kHz sine 0 VU  
1 kHz sine burst/1 field  
1 kHz sine burst/2 field  
1 kHz sine burst/5 field  
1 kHz sine burst/8 field  
1 kHz sine burst(10)  
4 kHz sine burst(40)  
Saw wave

### Setting of audio test signal generator

To set the audio test signal generator, turn the search dial while pressing the JOG button and display the desired setting.

This setting is valid until the maintenance mode is terminated.

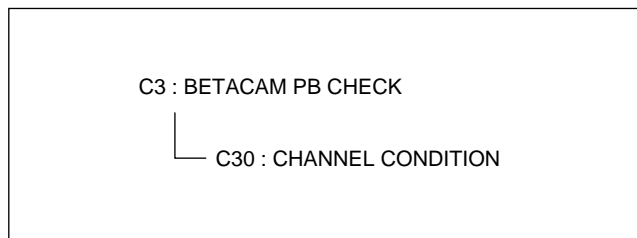
#### Notes

- This menu is set to OFF when the maintenance mode is activated.
- The output signal of a test signal generator can also be recorded on the tape or hard disk. In this case, press the SET button and perform the recording operation with the white square is displayed in the upper-right position of the superimpose picture.
- The test signal generator does not function when TAPE is set as the PLAYER device and when DISK is set as the RECORDER device.

## 4-2-5. BETACAM PB CHECK Mode (C3)

The C3 : BETACAM PB CHECK mode is used to check the playback RF system based on a Betacam/Betacam SP format.

In this unit, one menu is available.



Menu Tree of BETACAM PB Check Mode

### Note

Betacam/Betacam SP PB function of DNW-A100/A50/A45 is for NTSC (525/60) system only.  
Betacam/Betacam SP PB function of DNW-A100P/A50P/A45P is for PAL (625/50) system only.

### C30 : CHANNEL CONDITION

This menu displays the RF level condition of video channels (Y and C) in three steps (GRN, YEL, and RED) when the tape recorded based on a Betacam/Betacam SP format is played back in the PLAY mode.

### Note

If abnormality exists in the servo system of a VTR, the C30 : CHANNEL CONDITION menu does not function normally.

### To execute the check

- (1) Press the SET button.
  - A white square is displayed in the upper-right position of the superimpose picture.
  - The time data display area displays an ordinary time counter.
  - To cancel the check, press the MENU button.
- (2) Insert the cassette tape recorded based on a Betacam/Betacam SP format.
- (3) Press the PLAY button. (Playing back the tape in the PLAY mode.)
  - “>>>” is displayed on the superimpose picture.

### Note

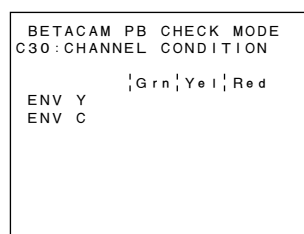
No check can be performed in modes other than PLAY. “>>>” is not displayed even if the portion recorded based on formats other than Betacam/Betacam SP or the non-recorded portion is played back in the PLAY mode.

- (4) Confirm that “>>>” is displayed in the “GRN” column of Y and C channels.
  - If “>>>” is displayed in columns other than “GRN”, refer to the “For Condition NG” on the next page.

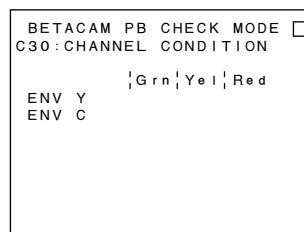
### To terminate the check

- (5) Stop the tape playback operation and eject the cassette.
- (6) Press the MENU button.
  - The square displayed in the upper-right position of the superimpose picture disappears.
  - The time data display area displays the former “C30-CHANNEL COND”.

### Example of display and operation

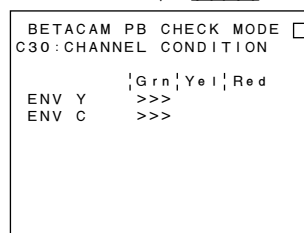


(1) ↓ [SET]



(2) ↓ Insert a recorded tape

(3) ↓ [PLAY]



(4) ↓ Confirm

(5) ↓ [STOP]

↓ [EJECT]

(6) ↓ [MENU]

## For Condition NG

Confirm, recheck, and perform the drum (video heads) cleaning according to the procedures below.

- (1) Change the tape playback portion, then recheck.  
 If no abnormality is found, the recheck is completed.
- (2) Perform the cleaning using a cleaning tape (in Section 5-2-1) (the amount of the tape used is five seconds), then recheck.  
 If no abnormality is found, the recheck is completed.
- (3) Perform the cleaning using a cleaning tape again (the amount of the tape used is 15 seconds), then recheck.  
 If no abnormality is found, the recheck is completed.
- (4) Clean the video heads with cleaning cloth referring to Sections 5-2-2 and 5-2-3, then recheck.  
 If no abnormality is found, the recheck is completed.  
 If the condition described above is not improved, the abnormality below is considered to have occurred.

## Abnormality on PB tape

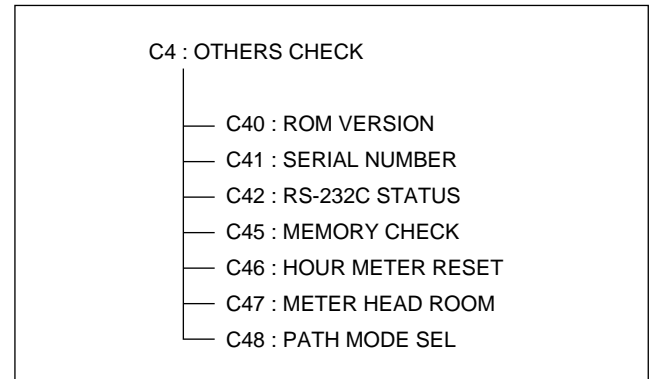
- The tape is damaged.
- The tape cannot be recorded properly.

## Abnormality in this unit

- Adjustment defect of Betacam PB system
  - ⇒ Readjust the Betacam PB system. (A3 : BETACAM PB ADJUST)  
 (Perform the adjustment corresponding to “6-4. DM-89 Board Replacement”.)
- Adjustment defect in tape transport system or component part installation defect.
  - ⇒ Readjust the tape transport system or reinstall the parts.  
 (Refer to the maintenance manual part 2, volume-1.)
- Worn PB head
  - ⇒ After confirming the hours meter (H2 : DRUM RUNNING HOURS), replace the upper drum assembly as required.  
 (Refer to the maintenance manual part 2, volume-1.)
- Drum assembly defect
- EQ-56 board defect

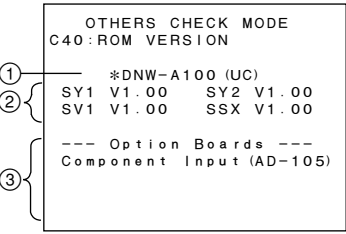
## 4-2-6. OTHERS CHECK Mode (C4)

The C4 : OTHERS CHECK mode has seven menus.



Menu Tree of OTHERS Check Mode

C40 : ROM VERSION



**Note**  
The display on the left is one of the displayed examples.

This menu displays the model name of this unit, the destination, the ROM version, and the information of the installed option.

Description of superimpose picture

- ① The model name of this unit and the destination in parentheses are displayed on the superimpose picture. The model name and destination are detected from the setting condition of the DIP switch (S1102) on the SS-63 board.
- ② Each version number of system control ROMs (SY1 and SY2), a VTR servo ROM (SV1), and an SSX board control ROM (SSX) is displayed on the superimpose picture.
- ③ The installed options are displayed as described below.  
BKDW-505/506 ⇒ Composite Input (DEC-65)  
BKNW-103 ⇒ SDTI Input (CP-300)  
BKNW-104 ⇒ Component Input (AD-105)  
BKNW-105 ⇒ AES/EBU Input/Output

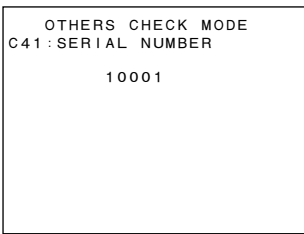
**Notes**

- These options are automatically detected when they are installed.
- The BKNW-103 option is used exclusively for DNW-A100/A100P.
- BKDW-505/506 and BKNW-104 are options either of which can be installed.

Menu operation

Turn the search dial to move the \* mark.  
The contents of an \*-marked item on the superimpose picture are displayed in a time data display area.  
The installed option is displayed on only the superimpose picture.

C41 : SERIAL NUMBER



This menu displays the serial number of this unit. When each serial number does not coincide because of repair, it can be set again in this menu.

- Notes**
- Set the serial number again after the MS-50 board or the NV-RAM (IC9 on the MS-50 board) is replaced.
  - “-----” is displayed in the state where no serial number is set.

Serial number setting

- (1) Turn the search dial to turn on and off the digit you wish to set.
- (2) Turn the search dial while pressing the JOG button and change the digit number.
  - Message “Push SET Button” is displayed on only the superimpose picture when the serial number is changed.
  - To cancel the setting, press the MENU button to terminate this menu.
- (3) Repeat steps (1) and (2) for each digit.
- (4) Press the SET button to save the set serial number.
  - Message “Saving...” is displayed on only the superimpose picture. If no abnormality is found, the display changes to “Save Complete” after a few seconds.

## C42 : RS-232C STATUS

OTHERS CHECK MODE	
C42:RS-232C STATUS	
① *BAUD RATE	19.2K
② ISR [	]
③ ID [	]
PE xx	FE xx OE xx
TXD (2) xxxx	RXD (3) xxxx
RTS (4) :H	CTS (5) :H
DSR (6) :H	DCD (8) :H
DTR (20) :H	

(This menu fail to function in the system ROM under 3.20 of version.)

This menu displays the communication state of an RS-232C interface. The communication baud rate can also be changed in this menu.

### Note

Only the information of the communication baud rate is displayed in a time data display area.

## Description of superimpose picture

- ① The communication baud rate is displayed on the superimpose picture. The baud rate can be selected from among the followings. (The factory setting is 19.2 K.)

1200, 2400, 4800, 9600, 19.2K (bps)

### Note

In a time data display area, 19.2K is displayed as “19 2K”.

- ② The status of an ISR protocol is displayed on the superimpose picture.

ISR x [y y y y . . . . .]

- ① Displays the protocol status of this unit.  
A: ACK send  
N: NAK send  
T: ATN (OPC or QRESP) send  
W: ACK wait  
X: XOFF receive, XON wait
- ② Displays the last ISR command that was received properly. (The preceding command is displayed until ACK transmission is completed.)

If no object for communication is connected to the RS-232C connector, items ① and ② become blank.

- ③ The device ID is displayed on the superimpose picture. The device ID is set using the DEVICE command of an ISR protocol. This setting is maintained (even if the power is turned off) until it is changed by the DEVICE command. The device ID becomes blank when it is not set.

- ④ The number of errors below that occur during reception is displayed on the superimpose picture.  
PE: Parity error  
FE: Framing error  
OE: Overrun error  
If no object for communication is connected to the RS-232C connector, each error is not displayed as a time count, but as “xx”.
- ⑤ The TXD/RXD signal displays the number of data items (number of bytes) properly sent and received in this unit in four digits (hexadecimal).  
Other signals display the connection state of an RS-232C connector in a high level (+3 V or more, or non-connection) and low level (−3 V or less).  
If no object for communication is connected to the RS-232C connector, TXD and RXD are displayed as “xxxx”.

## Setting of communication baud rate

- (1) Turn the search dial while pressing the JOG button and display the desired baud rate.
  - Message “Push SET Button” is displayed on only the superimpose picture when the setting is changed.
  - To cancel the setting, press the MENU button to terminate this menu.
- (2) Press the SET button to save the setting.
  - Message “Saving ...” is displayed on only the superimpose picture. If no abnormality is found, the display changes to “Save Complete” after a few seconds.  
To turn off “Save Complete”, turn the search dial.

### Note

A white square is displayed in the upper-right position of the superimpose picture when the SET button is pressed except during communication baud rate setting. This unit then enters the ordinary operation state (in which the ordinary operation of this unit except a menu system can be performed).

However, the character information (time code or operation status) superimposed during ordinary operation is not displayed.

To return to the former state, press the MENU button.

C45 : MEMORY CHECK

OTHERS CHECK MODE			
C45 : MEMORY CHECK			
0000*0000:	E8	FF	BD 27
0000 0004:	14	00	BF AF
0000 0008:	10	80	03 3C
0000 000C:	10	00	63 24
0000 0010:	F8	FF	60 AC
0000 0014:	F4	FF	60 AC
0000 0018:	FC	FF	60 AC
0000 001C:	1F	80	0D 3C
0000 0020:	00	FF	AD 35

This menu displays the ROM data installed in this unit in hexadecimal.

Note

This menu is used for inspection at the factory.

Menu operation

Turn the search dial to move the \* mark upward or downward. The address and data display portions are then scrolled.

Turn the search dial while pressing the JOG button: The address then changes 100H at a time.

Turn the search dial while pressing the VAR button: The address then changes 10000H at a time.

Turn the search dial while pressing the JOG and VAR buttons: The address then changes 1000000H at a time.

The contents of the \*-marked line on the superimpose picture are displayed in a time data display area.

Note

A white square is displayed in the upper-right position of the superimpose picture when the SET button is pressed. This unit then enters the ordinary operation state (in which the ordinary operation of this unit except a menu system can be performed).

However, the character information (time code or operation status) superimposed during ordinary operation is not displayed.

To return to the former state, press the MENU button.

C46 : HOUR METER RESET

OTHERS CHECK MODE			
C46 : HOUR METER RESET			
*DRUM HOURS		1	234
TAPE HOURS		1	23
THREAD COUNTER		2	345
AIR FILTER HRS		1	593

This menu can display and reset the values of the resettable hours meter and thread counter.

Description of superimpose picture

- DRUM HOURS: Indicates the total of drum rotation time. Same as in setup menu ITEM-H12.
- TAPE HOURS: Indicates the total of tape transport time. Same as in setup menu ITEM-H13.
- THREAD COUNTERS: Indicates the total of threading count. Same as in setup menu ITEM-H14.
- AIR FILTER HRS: Indicates the total of air filter time used. Same as in setup menu ITEM-H15.

Menu operation

Turn the search dial to move the \* mark. The contents of the \*-marked line on the superimpose picture are displayed in a time data display area.

To reset

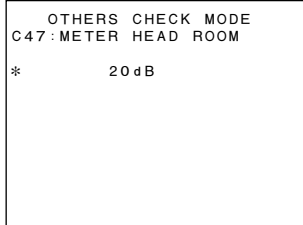
The former state cannot be returned when the SET button is pressed for reset operation.

- Turn the search dial and move the \* mark to the item to be reset.
- Turn the search dial in REVERSE (↶) direction while pressing the JOG button. = The display value then becomes zero ("0").
  - Message "Push SET Button" is displayed on only the superimpose picture when the display value is set to "0".
  - To return to the former state, turn the search dial in FORWARD (↷) direction.
- If there are other items to be reset, repeat steps (1) and (2).
- Press the SET button to save the reset data.
  - Message "Saving ..." is displayed on only the superimpose picture. If no abnormality is found, the display changes to "Save Complete" after a few seconds.

To turn off "Save Complete", turn the search dial.



## C47 : METER HEAD ROOM



This menu can change the head room setting of an audio level meter.

The head room can be selected from among the followings.  
(The factory setting is 20 dB.)

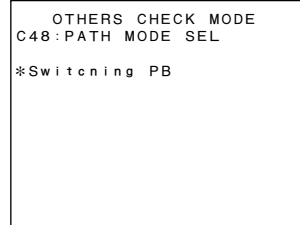
20 dB, 18 dB, 16 dB, 15 dB, 14 dB, 12 dB, 9 dB

### Head room setting

- (1) Turn the search dial while pressing the JOG button, and the desired setting is then displayed.
  - Message “Push SET Button” is displayed on only the superimpose picture when the setting is changed.
  - To cancel the setting, press the MENU button to terminate this menu.
- (2) Press the SET button to save the changed setting.
  - Message “Saving...” is displayed on only the superimpose picture. If no abnormality is found, the display changes to “Save Complete” after a few seconds.

To turn off “Save Complete”, turn the search dial.

## C48 : PATH MODE SEL



This menu sets the PB mode for confirming and adjusting video tracking. Switching PB and full PB modes are available for setting.

A PB signal is output to the test point (TP106) on the SS-63 board by the REC head when the tape is played back with this menu opened. (The signal output from this test point becomes an envelope waveform.)

In the switching PB mode, only the data area (helical track) based on an SX format is played back.

In the full PB mode, the overlap portion before and behind the data area based on an SX format is played back.

The switching PB mode is always set when the menu is opened.

### PB mode setting

To set the PB mode, turn the search dial while pressing the JOG button and display the desired setting.

### Menu operation

A white square is displayed in the upper-right position of the superimpose picture when the SET button is pressed after the switching PB and full PB modes are set. The unit then enters the ordinary operation state (in which the ordinary operation of this unit except a menu system can be performed.)

In this state, play back the specified alignment tape, and confirm and adjust the video tracking.

However, character information (time code or operation status) superimposed during ordinary operation is not displayed.

To return to the former state, press the MENU button.

### Note

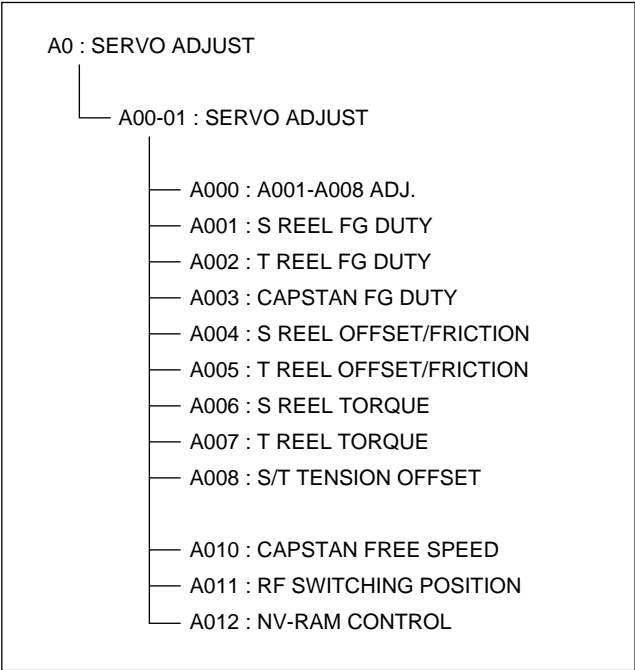
For the video tracking confirmation and adjustment, refer to “7-1-3. Video Tracking Confirmation and Adjustment” in the maintenance manual part 2, volume-1.

4-2-7. SERVO ADJUST Mode (A0)

The A0 : SERVO ADJUST mode is used to adjust the servo system of a VTR.

**Note**

In the SERVO ADJUST mode, only the menu number is displayed in a time data display area. (A00-01 is displayed as A00.)

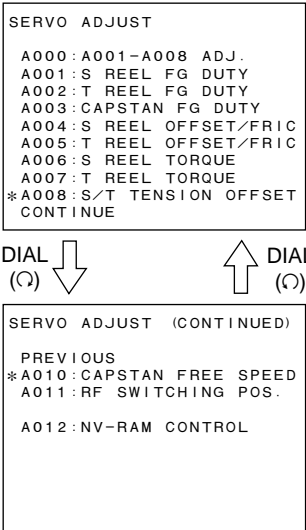


**Note**

The cassette tape is automatically ejected when the A00-01 : SERVO ADJUST menu is shifted to the lower-level menu with the cassette tape inserted into this unit.

A00-01 : SERVO ADJUST

In the A00-01 : SERVO ADJUST menu, the whole menu cannot be displayed on the superimpose picture at a time. Therefore, the display is divided into the menu selection screen of A000 to A008 and the menu selection screen of A010 and later. The menu selection screen is automatically switched when the search dial is turned.



**Note**

The menu title of A010 may be displayed as “CAPSTAN SPEED”.

**A000 : A001-A008 ADJ.**

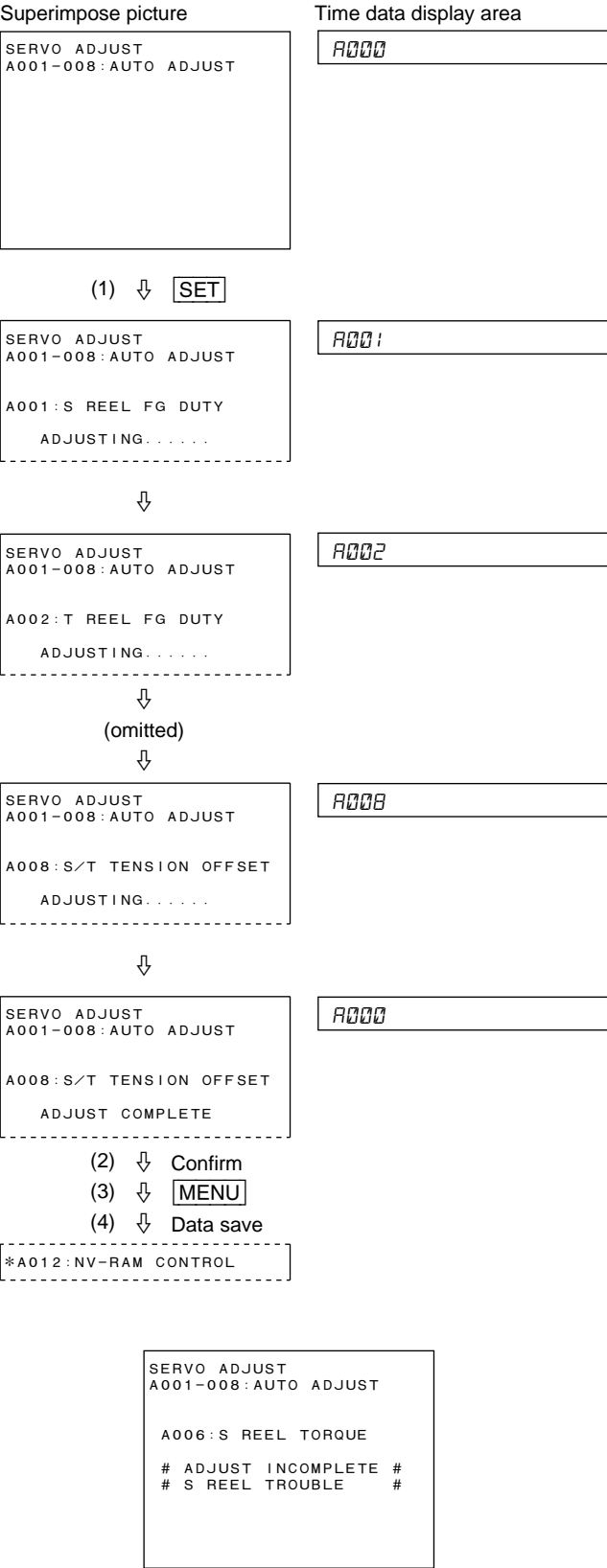
This menu is used to execute the adjustment menus below automatically and continuously.

- A001 : S REEL FG DUTY
- A002 : T REEL FG DUTY
- A003 : CAPSTAN FG DUTY
- A004 : S REEL OFFSET/FRICTION
- A005 : T REEL OFFSET/FRICTION
- A006 : S REEL TORQUE
- A007 : T REEL TORQUE
- A008 : S/T TENSION OFFSET

**To execute the adjustment menus**

- (1) Press the SET button.
  - The automatic adjustment is initiated when the SET button is pressed.  
The execution time is about 150 seconds.
  - The adjustment menu name in execution and message “ADJUSTING.....” are displayed on the superimpose picture during automatic adjustment. Only the menu number is displayed in a time data display area.
  - Message “ADJUST COMPLETE” is momentarily displayed on the superimpose picture when each adjustment menu is completed normally. Message “# ADJUST INCOMPLETE #” is displayed on the superimpose picture when no adjustment can be performed. The automatic adjustment is then interrupted. Refer to the “For Automatic Adjustment Failure” on page 4-49 when this message is displayed.
- (2) Confirm the adjustment result.
  - Message “ADJUST COMPLETE” remains displayed on the superimpose picture when all adjustments are completed normally.
- (3) Press the MENU button to terminate the menu.
- (4) To save the adjustment data in the NV-RAM of a servo system, execute the SAVE SERVO ADJUST data in an A012 : NV-RAM CONTROL menu.

**Example of display and operation**  
**Example of A001 : S REEL FG DUTY**



**Ex.: When failing the automatic adjustment**

**A001 : S REEL FG DUTY**  
**A002 : T REEL FG DUTY**  
**A003 : CAPSTAN FG DUTY**  
**A004 : S REEL OFFSET/FRICTION**  
**A005 : T REEL OFFSET/FRICTION**  
**A006 : S REEL TORQUE**  
**A007 : T REEL TORQUE**  
**A008 : S/T TENSION OFFSET**

These menus are used to perform the automatic adjustments below.

- A001 : S reel FG duty adjustment
- A002 : T reel FG duty adjustment
- A003 : Capstan FG duty adjustment
- A004 : S reel offset/friction adjustment
- A005 : T reel offset/friction adjustment
- A006 : S reel torque adjustment
- A007 : T reel torque adjustment
- A008 : S/T tension offset adjustment

### To execute the automatic adjustments

- (1) Press the SET button.
  - The automatic adjustment is initiated when the SET button is pressed.
  - The execution time is about 15 seconds for A001 to A003 and about 20 seconds for others.
  - Message “ADJUSTING.....” is displayed on only the superimpose picture during automatic adjustment.
- (2) Confirm the adjustment result.
  - Message “ADJUST COMPLETE” is displayed on the superimpose picture when the automatic adjustment is completed normally.
  - Message “# ADJUST INCOMPLETE #” is displayed on the superimpose picture when no adjustment can be performed. The automatic adjustment is then interrupted. Refer to the “For Automatic Adjustment Failure” on page 4-49 when this message is displayed.
- (3) Press the MENU button to terminate the menu.
- (4) To save the adjustment data in the NV-RAM of a servo system, execute the SAVE SERVO ADJUST data in an A012 : NV-RAM CONTROL menu.

### Example of display and operation

#### Example of A001 : S REEL FG DUTY

```
SERVO ADJUST
A001:S REEL FG DUTY
```

(1) ↓ **SET**

```
SERVO ADJUST
A001:S REEL FG DUTY

ADJUSTING.....
```

↓

```
SERVO ADJUST
A001:S REEL FG DUTY

ADJUST COMPLETE
```



(2) ↓ Confirm

(3) ↓ **MENU**

(4) ↓ Data save

```
*A012:NV-RAM CONTROL
```

```
SERVO ADJUST
A001:S REEL FG DUTY

# ADJUST INCOMPLETE #
# S REEL TROUBLE      #
```

**Ex.: When failing the automatic adjustment**

**A010 : CAPSTAN FREE SPEED**

This menu is used to perform the automatic adjustment of a capstan free speed.

**To execute the automatic adjustment**

**Notes**

- Alignment tapes SR2-1 and SR2-1P, and CR2-1B (DNW-A100/A50/A45) or CR2-1B PS (DNW-A100P/A50P/A45P) are required for this adjustment. Perform the adjustment with each alignment tape.
- Message “SET SR2-1 ALIGNMENT TAPE AND PUSH PLAY KEY” is displayed on the superimpose picture when this menu is opened. However, it is not necessary to press the PLAY button.

(1) Insert the following alignment tape.

System	DNW-A100/A50/A45	DNW-A100P/A50P/A45P
525/60	SR2-1 or CR2-1B	SR2-1
625/50	SR2-1P	SR2-1P or CR2-1B PS

- The adjustment is initiated when an alignment tape is inserted.
- Message “ADJUSTING.....” is displayed on only the superimpose picture during automatic adjustment.

**Notes**

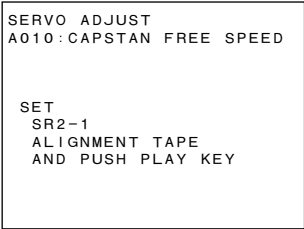
- Be sure to use the specified alignment tape. If the specified cassette tape is not used, the adjustment cannot be properly performed even if message “ADJUST COMPLETE” is displayed after it is completed.
- The tape amount on the portion that can be played back after an alignment tape is inserted must exceed the adjustment execution time. The adjustment execution time is usually about 15 seconds.

(2) Confirm the adjustment result.

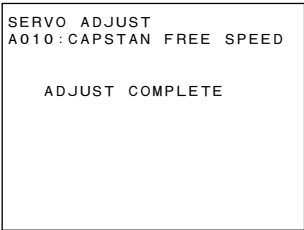
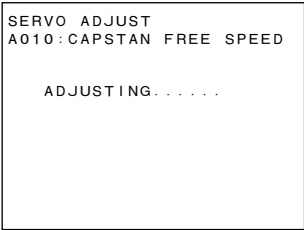
- Message “ADJUST COMPLETE” is displayed on the superimpose picture when the automatic adjustment is completed normally. An alignment tape is ejected automatically.
- Message “# ADJUST INCOMPLETE #” is displayed on the superimpose picture when no adjustment can be performed. The automatic adjustment is then interrupted. Refer to the “For Automatic Adjustment Failure” on page 4-49 when this message is displayed.

- (3) Press the MENU button to terminate the menu.
- (4) To save the adjustment data in the NV-RAM of a servo system, execute the SAVE SERVO ADJUST data in an A012 : NV-RAM CONTROL menu.

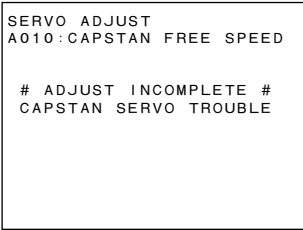
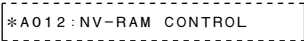
**Example of display and operation**



(1) ⇩ Insert the alignment tape



- (2) ⇩ Confirm
- (3) ⇩ **MENU**
- (4) ⇩ Data save



**Ex.: When failing the automatic adjustment**

**A011 : RF SWITCHING POS.**

This menu is used to adjust the RF switching position automatically or manually. Only the automatic adjustment is described below.

**To execute the automatic adjustment**

**Note**

Alignment tapes SR2-1 (for a 525/60 system) and SR2-1P (for a 625/50 system) located at the beginning of time code 00:25:00:00 in advance is required for this adjustment.

If the specified cassette tape is not used, the adjustment cannot be properly performed even if message “ADJUST COMPLETE” is displayed after it is completed.

- (1) Confirm that an \* mark is assigned to the “AUTO” display on the superimpose picture and press the SET button.
  - If the \* mark is assigned to the “MANUAL” display, turn the search dial and move the mark to the “AUTO” display.
  - In a time data display area, the automatic adjustment (AUTO) is displayed as “A0110”, and the manual adjustment (MANUAL) is displayed as “A0111”.
- (2) Insert alignment tape SR2-1 (for a 525/60 system) or SR2-1P (for a 626/50 system) located in the beginning of time code 00:25:00:00.
  - The adjustment is initiated when an alignment tape is inserted.
  - Message “ADJUSTING.....” is displayed on only the superimpose picture during automatic adjustment.
- (3) Confirm the adjustment result.
  - Message “ADJUST COMPLETE” is displayed on the superimpose picture when the automatic adjustment is completed normally.  
An alignment tape is ejected automatically.
  - Message “# ADJUST INCOMPLETE #” is displayed on the superimpose picture when no adjustment can be performed. The automatic adjustment is then interrupted. Refer to the “For Automatic Adjustment Failure” on page 4-49 when this message is displayed.
- (4) Press the MENU button to terminate the menu.
- (5) To save the adjustment data in the NV-RAM of a servo system, execute the SAVE SERVO ADJUST data in an A012 : NV-RAM CONTROL menu.

**Example of display and operation**

Superimpose picture

SERVO ADJUST  
A011:RF SWITCHING POS.  
  
\*AUTO  
MANUAL  
  
PG DATA:BDF5

Time data display area

A0110

(1) ↓ **SET**

Superimpose picture

SERVO ADJUST  
A011:RF SWITCHING POS.  
  
SET  
SR2-1  
ALIGNMENT TAPE  
TC 00:25:00:00  
  
PG DATA:C000

Time data display area

A011

(2) ↓ Insert SR2-1/SR2-1P

Superimpose picture

SERVO ADJUST  
A011:RF SWITCHING POS.  
  
ADJUSTING.....  
  
PG DATA:BFFF

Time data display area

A011

↓

Superimpose picture

SERVO ADJUST  
A011:RF SWITCHING POS.  
  
ADJUST COMPLETE  
  
PG DATA:BDF7

Time data display area

A011

(3) ↓ Confirm

(4) ↓ **MENU**

(5) ↓ Data save

\*A012:NV-RAM CONTROL

SERVO ADJUST  
A011:RF SWITCHING POS.  
  
# ADJUST INCOMPLETE #  
  
PG DATA:C000

**When failing the automatic adjustment**

## For Automatic Adjustment Failure

The circuit in which failure occurred can be traced to some degree by the trouble message displayed together when message “# ADJUST INCOMPLETE #” is displayed during execution of adjustment menus A000 to A011.

### Note

The trouble message display indicates that no adjustment could be performed because the circuit described in this manual does not operate normally. Moreover, other circuits (e.g., control signal system) in which failure actually occurred may also exist.

## A000 : A000-A008 ADJUST

Refer to the description of A001 to A008.

### A001 : S REEL FG DUTY

When “S REEL FG AMP TROUBLE” is displayed

- ⇒ Check the S reel FG amplifier circuit on the MS-50 board.

When “S REEL DRIVER TROUBLE” is displayed

- ⇒ Check the S reel motor driver circuit on the DR-315 board.

### A002 : T REEL FG DUTY

When “T REEL FG AMP TROUBLE” is displayed

- ⇒ Check the T reel FG amplifier circuit on the MS-50 board.

When “T REEL DRIVER TROUBLE” is displayed

- ⇒ Check the T reel motor driver circuit on the DR-315 board.

### A003 : CAPSTAN FG DUTY

When “CAPSTAN FG AMP TROUBLE” is displayed

- ⇒ Check the capstan FG amplifier circuit on the MS-50 board.
- ⇒ Check the capstan motor driver circuit on the DR-315 board.

### A004 : S REEL OFFSET/FRICTION

### A006 : S REEL TORQUE

“# S REEL TROUBLE #” is displayed in these menus.

- ⇒ Execute the S reel FG duty adjustment (A001 : S REEL FG DUTY) again.
- ⇒ Check the S reel motor driver circuit on the DR-315 board.

### A005 : T REEL OFFSET/FRICTION

### A007 : T REEL TORQUE

“# T REEL TROUBLE #” is displayed in these menus.

- ⇒ Execute the T reel FG duty adjustment (A002 : T REEL FG DUTY) again.
- ⇒ Check the T reel motor driver circuit on the DR-315 board.

### A008 : S/T TENSION OFFSET

When “S REEL DRIVER TROUBLE” is displayed

- ⇒ Check the S tension detection circuit on the MS-50 board.
- ⇒ Check the S reel motor driver circuit on the DR-315 board.

When “T REEL DRIVER TROUBLE” is displayed

- ⇒ Check the T tension detection circuit on the MS-50 board.
- ⇒ Check the T reel motor driver circuit on the DR-315 board.

### A010 : CAPSTAN FREE SPEED

Confirm whether the played back tape is alignment tape SR2-1 (for a 525/60 system), SR2-1P (for a 625/50 system), CR2-1B (for DNW-A100/A50/A45 at 525/60 system), or CR2-1B PS (for DNW-A100P/A50P/A45P at 625/50 system).

When “CAPSTAN SERVO TROUBLE” is displayed

- ⇒ Execute the capstan FG duty adjustment (A003 : CAPSTAN FG DUTY) again.
- ⇒ Check the capstan FG amplifier circuit and CTL amplifier circuit on the MS-50 board.

When “CAPSTAN DRIVER TROUBLE” is displayed

- ⇒ Check the capstan motor driver circuit on the DR-315 board.

### A011 : RF SWITCHING POS.

Confirm whether the played back tape is alignment tape SR2-1 (for a 525/60 system) or SR2-1P (for a 625/50 system).

A012 : NV-RAM CONTROL

The A012 : NV-RAM CONTROL menu is used to save the servo adjustment data adjusted in the SERVO ADJUST mode in the NV-RAM of a servo system.

CAUTION

Do not save the adjustment data in NV-RAM when abnormality is found during automatic adjustment (when “# ADJUST INCOMPLETE #” is displayed).

Note

When adjustment data was not stored in this menu, it returns to the state before adjustment if the power is turned off.

To execute the data save

- (1) Turn the search dial and move the \* mark to “SAVE SERVO ADJUST DATA” on the superimpose picture.
  - In a time data display area, NO OPERATION is displayed as “A0120”, and SAVE SERVO ADJUST DATA is displayed as “A0121”.
- (2) Press the SET button.
  - The data transmission is initiated when the SET button is pressed. The data transmission time is about ten seconds.
  - Message “SAVING.....” is displayed on the superimpose picture, and “A0121 00” is displayed in the time data display area.
- (3) Confirm that the data transmission is completed.
  - After the data transmission is completed, message “DATA SAVED” is displayed on the superimpose picture and “A0121 10” is displayed in the time data display area.
- (4) Press the MENU button to terminate the menu.

Example of display and operation

Superimpose picture

SERVO ADJUST  
A012:NV-RAM CONTROL  
  
\*NO OPERATION  
SAVE SERVO ADJUST DAT

Time data display area

A0120

(1) ↓ DIAL (↻)

Superimpose picture

SERVO ADJUST  
A012:NV-RAM CONTROL  
  
NO OPERATION  
\*SAVE SERVO ADJUST DATA

Time data display area

A0121

(2) ↓ SET

Superimpose picture

SERVO ADJUST  
A012:NV-RAM CONTROL  
  
NO OPERATION  
\*SAVE SERVO ADJUST DATA  
  
SAVING.....

Time data display area

A0121 00

↓

Superimpose picture

SERVO ADJUST  
A012:NV-RAM CONTROL  
  
NO OPERATION  
\*SAVE SERVO ADJUST DATA  
  
DATA SAVED

Time data display area

A0121 10

(3) ↓ Confirm

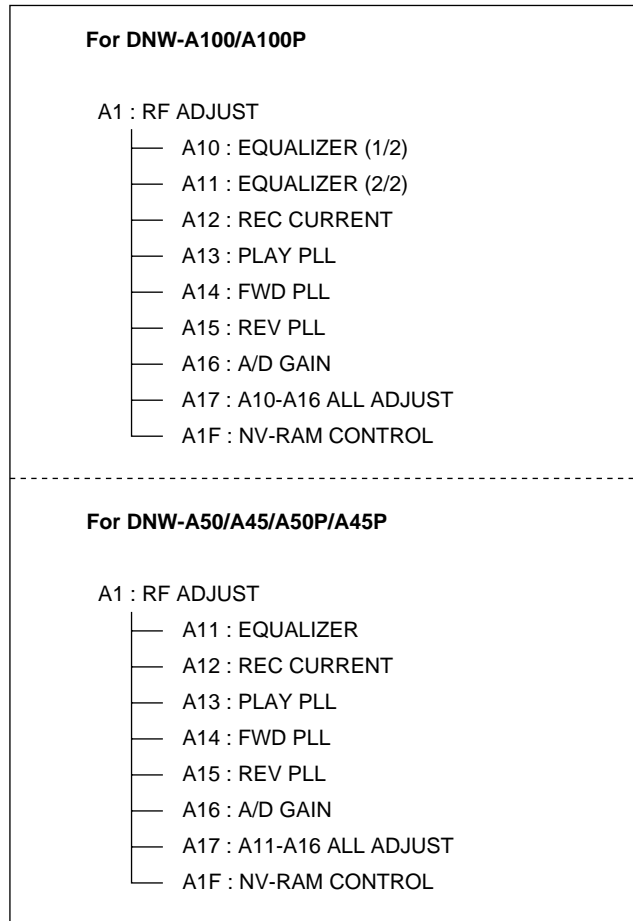
(4) ↓ MENU



## 4-2-8. RF ADJUST Mode (A1)

The A1 : RF ADJUST mode is used to adjust the RF system of a VTR.

Nine menus are available for DNW-A100/A100P, and eight menus are available for DNW-A50/A45/A50P/A45P.



**Menu Tree of RF System Adjustment Mode**

### Note

If abnormality exists in the servo system of a VTR, each menu in A1 : RF ADJUST does not function normally.

### A10 : EQUALIZER(1/2)

..... (For DNW-A100/A100P only)

### A11 : EQUALIZER(2/2)

..... (For DNW-A100/A100P)

### A11 : EQUALIZER

.... (For DNW-A50/A45/A50P/A45P)

### A12 : REC CURRENT

### A13 : PLAY PLL

### A14 : FWD PLL

### A15 : REV PLL

### A16 : A/D GAIN

These menus are used to perform the automatic adjustments below.

### A10 : EQUALIZER(1/2)

This menu automatically adjusts the PB head PB levels (VC) for A1, A3, A5, A7, B1, B3, B5, and B7 channels, and the gain (EQ) and phase (PH) of a PB equalizer. This menu is used exclusively for DNW-A100/A100P. It is not displayed for DNW-A50/A45/A50P/A45P.

### A11 : EQUALIZER(2/2), A11 : EQUALIZER

These menus automatically adjust the PB head PB levels (VC) for A2, A4, A6, A8, B2, B4, B6, and B8 channels, and the gain (EQ) and phase (PH) of a PB equalizer.

### A12 : REC CURRENT

This menu automatically adjusts the recording current levels for the REC heads (channels A and B).

### A13 : PLAY PLL

This menu automatically adjusts the VCO free-running frequency in a PB PLL circuit for PLAY mode.

### A14 : FWD PLL

This menu automatically adjusts the VCO free-running frequency in a PB PLL circuit for F FWD mode.

### A15 : REV PLL

This menu automatically adjusts the VCO free-running frequency in a PB PLL circuit for REV mode.

### A16 : A/D GAIN

This menu automatically adjusts the gain when a PB RF signal is converted from analog to digital.

Right side display is an example of the adjustment data during the STOP button is pressed.  
Actually, adjustment data is displayed at the “xx” portion.

RF ADJUST MODE			
A10: EQUALIZER (1/2)			
Auto Adjust (Push SET)			
ch	RSLT	ch	RSLT
A1	B1		
A3	B3		
A5	B5		
A7	B7		
*ALL			

A10 : EQUALIZER (1/2) for DNW-A100/A100P only

RF ADJUST MODE							
A10: EQUALIZER (1/2)							
Auto Adjust (Push SET)							
ch	VC	EQ	PH	ch	VC	EQ	PH
A1	xx	xx	xx	B1	xx	xx	xx
A3	xx	xx	xx	B3	xx	xx	xx
A5	xx	xx	xx	B5	xx	xx	xx
A7	xx	xx	xx	B7	xx	xx	xx
*ALL							

RF ADJUST MODE			
A14: FWD PLL			
Auto Adjust (Push SET)			
ch	RSLT	ch	RSLT
A1/5	B1/5		
A2/6	B2/6		
A3/7	B3/7		
A4/8	B4/8		
*ALL			

A14 : FWD PLL for DNW-A100/A100P

RF ADJUST MODE			
A14: FWD PLL			
Auto Adjust (Push SET)			
ch	VR	ch	VR
A1/5	xx	B1/5	xx
A2/6	xx	B2/6	xx
A3/7	xx	B3/7	xx
A4/8	xx	B4/8	xx
*ALL			

RF ADJUST MODE			
A11: EQUALIZER (2/2)			
Auto Adjust (Push SET)			
ch	RSLT	ch	RSLT
A2	B2		
A4	B4		
A6	B6		
A8	B8		
*ALL			

A11 : EQUALIZER (2/2) for DNW-A100/A100P

RF ADJUST MODE							
A11: EQUALIZER (2/2)							
Auto Adjust (Push SET)							
ch	VC	EQ	PH	ch	VC	EQ	PH
A2	xx	xx	xx	B2	xx	xx	xx
A4	xx	xx	xx	B4	xx	xx	xx
A6	xx	xx	xx	B6	xx	xx	xx
A8	xx	xx	xx	B8	xx	xx	xx
*ALL							

RF ADJUST MODE			
A14: FWD PLL			
Auto Adjust (Push SET)			
ch	RSLT	ch	RSLT
A2/6	B2/6		
A4/8	B4/8		
*ALL			

A14 : FWD PLL for DNW-A50/A45/A50P/A45P

RF ADJUST MODE			
A14: FWD PLL			
Auto Adjust (Push SET)			
ch	VR	ch	VR
A2/6	xx	B2/6	xx
A4/8	xx	B4/8	xx
*ALL			

RF ADJUST MODE			
A11: EQUALIZER			
Auto Adjust (Push SET)			
ch	RSLT	ch	RSLT
A2	B2		
A4	B4		
A6	B6		
A8	B8		
*ALL			

A11 : EQUALIZER for DNW-A50/A45/A50P/A45P

RF ADJUST MODE							
A11: EQUALIZER							
Auto Adjust (Push SET)							
ch	VC	EQ	PH	ch	VC	EQ	PH
A2	xx	xx	xx	B2	xx	xx	xx
A4	xx	xx	xx	B4	xx	xx	xx
A6	xx	xx	xx	B6	xx	xx	xx
A8	xx	xx	xx	B8	xx	xx	xx
*ALL							

RF ADJUST MODE			
A15: REV PLL			
Auto Adjust (Push SET)			
ch	RSLT	ch	RSLT
A1/5	B1/5		
A2/6	B2/6		
A3/7	B3/7		
A4/8	B4/8		
*ALL			

A15 : REV PLL for DNW-A100/A100P

RF ADJUST MODE			
A15: REV PLL			
Auto Adjust (Push SET)			
ch	VR	ch	VR
A1/5	xx	B1/5	xx
A2/6	xx	B2/6	xx
A3/7	xx	B3/7	xx
A4/8	xx	B4/8	xx
*ALL			

RF ADJUST MODE			
A12: REC CURRENT			
Auto Adjust (Push SET)			
ch	RSLT	ch	RSLT
A	B		
*ALL			

A12 : REC CURRENT

RF ADJUST MODE			
A12: REC CURRENT			
Auto Adjust (Push SET)			
ch	VR	ch	VR
A	xx	B	xx
*ALL			

RF ADJUST MODE			
A15: REV PLL			
Auto Adjust (Push SET)			
ch	RSLT	ch	RSLT
A2/6	B2/6		
A4/8	B4/8		
*ALL			

A15 : REV PLL for DNW-A50/A45/A50P/A45P

RF ADJUST MODE			
A15: REV PLL			
Auto Adjust (Push SET)			
ch	VR	ch	VR
A2/6	xx	B2/6	xx
A4/8	xx	B4/8	xx
*ALL			

RF ADJUST MODE			
A13: PLAY PLL			
Auto Adjust (Push SET)			
ch	RSLT	ch	RSLT
A1/5	B1/5		
A2/6	B2/6		
A3/7	B3/7		
A4/8	B4/8		
*ALL			

A13 : PLAY PLL for DNW-A100/A100P

RF ADJUST MODE			
A13: PLAY PLL			
Auto Adjust (Push SET)			
ch	VR	ch	VR
A1/5	xx	B1/5	xx
A2/6	xx	B2/6	xx
A3/7	xx	B3/7	xx
A4/8	xx	B4/8	xx
*ALL			

RF ADJUST MODE			
A16: A/D GAIN			
Auto Adjust (Push SET)			
ch	RSLT	ch	RSLT
A1/5	B1/5		
A2/6	B2/6		
A3/7	B3/7		
A4/8	B4/8		
*ALL			

A16 : A/D GAIN for DNW-A100/A100P

RF ADJUST MODE			
A16: A/D GAIN			
Auto Adjust (Push SET)			
ch	VR	ch	VR
A1/5	xx	B1/5	xx
A2/6	xx	B2/6	xx
A3/7	xx	B3/7	xx
A4/8	xx	B4/8	xx
*ALL			

RF ADJUST MODE			
A13: PLAY PLL			
Auto Adjust (Push SET)			
ch	RSLT	ch	RSLT
A2/6	B2/6		
A4/8	B4/8		
*ALL			

A13 : PLAY PLL for DNW-A50/A45/A50P/A45P

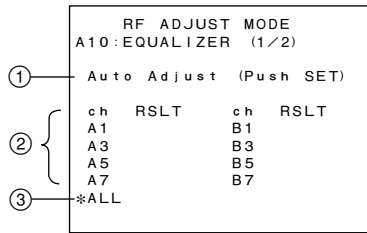
RF ADJUST MODE			
A13: PLAY PLL			
Auto Adjust (Push SET)			
ch	VR	ch	VR
A2/6	xx	B2/6	xx
A4/8	xx	B4/8	xx
*ALL			

RF ADJUST MODE			
A16: A/D GAIN			
Auto Adjust (Push SET)			
ch	RSLT	ch	RSLT
A2/6	B2/6		
A4/8	B4/8		
*ALL			

A16 : A/D GAIN for DNW-A50/A45/A50P/A45P

RF ADJUST MODE			
A16: A/D GAIN			
Auto Adjust (Push SET)			
ch	VR	ch	VR
A2/6	xx	B2/6	xx
A4/8	xx	B4/8	xx
*ALL			

## Description of superimpose picture



Ex. A10 : EQUALIZER (1/2)

- ① The display in this line changes. Each display and its meaning are described below.  
 Auto Adjust(Push SET) : Press the SET button to initiate the automatic adjustment.  
 Insert SR5-1 : Insert an alignment tape.  
 Insert Blank Tape : Insert the tape on which recording is possible.  
 Auto Tracking ... : Tracking is in an optimization process.  
 Auto Adjusting ... : Automatic adjustment is in progress.  
 Auto Adjust Complete : Automatic adjustment is completed.  
 Auto Adjust Failure : Automatic adjustment failure  
 Condition NG : Error condition NG

- ② To perform the automatic adjustment for each channel (circuit), select using a \* mark.  
 The adjustment result (OK, NG, or FAIL) is displayed on the right of the channel name. "OK" is displayed if the adjustment can be performed normally. "NG" is displayed if the error condition is bad. "FAIL" is displayed if the automatic adjustment fails.

### Note

"RSLT" indicates the result.

The adjustment data in each channel (circuit) is displayed while the STOP button is pressed during except adjustment.

### Note

Do not press the STOP button during adjustment. The tape stops and the adjustment becomes impossible.

- ③ To perform the automatic adjustment in all channels (circuits) at a time, select ALL.  
 After the automatic adjustment in all channels (circuits) is completed, "OK" is displayed on the right of ALL if all channels (circuits) are OK. If there is one channel in which NG or failure occurs, "NG" or "FAIL" is displayed on the right of ALL. If both NG and failure occur in channels, "FAIL" is displayed.

## To execute the adjustment

- (1) Insert the specified cassette tape.

### Notes

- If the specified cassette tape is not used, the adjustment cannot be properly performed even if message "Auto Adjust Complete" is displayed after it is completed. In an A12 : REC CURRENT menu, insert the tape that can be recorded based on a Betacam SX format. In other menus, insert alignment tape SR5-1 (a 525/60 system) or SR5-1P (for a 625/50 system).
- Execute an A12 : REC CURRENT menu with the REC INHIBIT indicator turned off. The cassette tape is ejected when this indicator lights. This indicator lights when the REC inhibit plug on the cassette tape is pushed or when the REC INHIBIT switch on the subcontrol panel is set to ON.
- Take care that the tape transport mode does not change during automatic adjustment.  
 Any adjustment cannot be properly performed in modes other than tape transport that was set automatically. Moreover, in modes other than tape transport, the automatic adjustment cannot be performed any longer or "FAIL" or "NG" is displayed as the adjustment result. Therefore, pay attention to the transport start position of the tape so that the end and beginning of the tape are not detected during adjustment. The minimum tape amount required for normal automatic adjustment is shown in the table on the next page. However, the tape amount increases or decreases when abnormality occurs.

Menu	Ordinary adjustment time	Tape amount required (Transport mode)
A10 : EQUALIZER T A11 : EQUALIZER T	About 2 min./ALL, about 15 sec./channel	Adjustment time (PLAY)
A12 : REC CURRENT ①	About 7 sec./ALL, about 3 sec./channel	Adjustment time (REC)
A13 : PLAY PLL	About 12 sec./ALL, about 10 sec./circuit	Adjustment time (PLAY)
A14 : FWD PLL	About 10 sec.	About 10 min. (F FWD)
A15 : REV PLL	About 10 sec.	About 11 min. (REV)
A16 : A/D GAIN ①	*About 90 sec./ALL, about 10 sec./circuit	Adjustment time (PLAY)

In a menu with ①, tracking operation is performed.  
\* : About 45 sec./ALL in DNW-A50/A45/A50P/A45P

- (2) Turn the search dial and move the \* mark to the channel to be adjusted or ALL.
  - Usually, select ALL.
- (3) Press the SET button.
  - The tape runs automatically and the automatic adjustment is initiated.
  - Message “Auto Tracking...” (only a menu in which tracking operation is performed) or “Adjusting...” is displayed on the superimpose picture.

**Note**

- When ALL adjustment is performed in the menu in which tracking operation is carried out, the adjustment result of the channel is displayed every time one-channel (circuit) adjustment is completed.
- The time data display area displays an ordinary time counter.
  - To cancel the automatic adjustment, press the MENU button.
  - Message “Insert SR5-1” or “Insert Blank Tape” is displayed on the superimpose picture when no cassette tape is inserted.

When a cassette tape is inserted, the tape runs automatically and the automatic adjustment is initiated.

**Notes**

- If message “Auto Adjust (Push SET)” is continuously displayed on the superimpose picture with the automatic adjustment initiated (the SET button pressed), the non-recorded portion on the tape is judged to be played back from the beginning. Change the playback position on the tape (not including an A12 : REC CURRENT menu).
- Do not touch the button or search dial, during automatic adjustment, that influences the tape transport. Any adjustment cannot be properly performed when the tape transport state is changed. In this case, the automatic adjustment cannot be performed any longer or “FAIL” or “NG” is displayed as the adjustment result.

- (4) Confirm the result of automatic adjustment on the superimpose picture.
  - If no abnormality is found, “OK” is displayed on the right of the selected channel (circuit).
  - Refer to the “For Condition NG/Automatic Adjustment Failure” on page 4-58 when “Condition NG” or “Auto Adjust Failure” is displayed on the superimpose picture.
  - To confirm the adjustment data, press the STOP button.

**Note**

“OK”, “NG”, or “FAIL” is displayed in a time data display area.

The adjustment result for each channel (circuit) is displayed when the search dial is turned after ALL adjustment is completed.

- (5) To terminate the menu, press the MENU button. To execute the automatic adjustment again in this menu, return to step (2).
- (6) To save the adjustment data in NV-RAM, execute SAVE ALL ADJUST DATA in an A1F : NV-RAM CONTROL menu. To return the adjustment data to the state before adjustment, execute ALL DATA PREVIOUS in an A1F : NV-RAM CONTROL menu.

**Note**

Do not save the adjustment data in NV-RAM when abnormality is found during automatic adjustment (message “Auto Adjust Failure” or “Condition NG” is displayed).

Example of display and operation

Ex.: ALL is selected in  
A11 : EQUALIZER (2/2)  
for DNW-A100/A100P.

RF ADJUST MODE  
A11: EQUALIZER (2/2)

Auto Adjust (Push SET)

ch	RSLT	ch	RSLT
A2		B2	
A4		B4	
A6		B6	
A8		B8	
*ALL			

- (1) ↓ Insert SR5-1/SR5-1P  
(2) ↓ Select  
(3) ↓ SET

RF ADJUST MODE  
A11: EQUALIZER (2/2)

Auto Tracking ...

ch	RSLT	ch	RSLT
A2		B2	
A4		B4	
A6		B6	
A8		B8	
*ALL			



RF ADJUST MODE  
A11: EQUALIZER (2/2)

Auto Adjusting .....

ch	RSLT	ch	RSLT
A2		B2	
A4		B4	
A6		B6	
A8		B8	
*ALL			



RF ADJUST MODE  
A11: EQUALIZER (2/2)

Auto Adjust Complete

ch	RSLT	ch	RSLT
A2	OK	B2	
A4		B4	
A6		B6	
A8		B8	
*ALL			



(omitted)



RF ADJUST MODE  
A11: EQUALIZER (2/2)

Auto Adjust Complete

ch	RSLT	ch	RSLT
A2	OK	B2	OK
A4	OK	B4	OK
A6	OK	B6	OK
A8	OK	B8	OK
*ALL OK			

- (4) ↓ Confirm  
(5) ↓ MENU  
(6) ↓ Data save

\*A1F: NV-RAM CONTROL

Ex.: ALL is elected in  
A12 : REC CURRENT.

RF ADJUST MODE  
A12: REC CURRENT

Auto Adjust (Push SET)

ch	RSLT	ch	RSLT
A		B	
*ALL			

- (1) ↓ Insert a recording tape  
(2) ↓ Select  
(3) ↓ SET

RF ADJUST MODE  
A12: REC CURRENT

Auto Adjusting .....

ch	RSLT	ch	RSLT
A		B	
*ALL			



RF ADJUST MODE  
A12: REC CURRENT

Auto Adjust Complete

ch	RSLT	ch	RSLT
A	OK	B	
*ALL			



RF ADJUST MODE  
A12: REC CURRENT

Auto Adjusting .....

ch	RSLT	ch	RSLT
A	OK	B	
*ALL			



RF ADJUST MODE  
A12: REC CURRENT

Auto Adjust Complete

ch	RSLT	ch	RSLT
A	OK	B	OK
*ALL OK			

- (4) ↓ Confirm  
(5) ↓ MENU  
(6) ↓ Data save

\*A1F: NV-RAM CONTROL

Ex.: ALL is selected in  
A13 : PLAY PLL  
for DNW-A100/A100P.

RF ADJUST MODE  
A13: PLAY PLL

Auto Adjust (Push SET)

ch	RSLT	ch	RSLT
A1/5		B1/5	
A2/6		B2/6	
A3/7		B3/7	
A4/8		B4/8	
*ALL			

- (1) ↓ Insert SR5-1/SR5-1P  
(2) ↓ Select  
(3) ↓ SET

RF ADJUST MODE  
A13: PLAY PLL

Auto Adjusting

ch	RSLT	ch	RSLT
A1/5		B1/5	
A2/6		B2/6	
A3/7		B3/7	
A4/8		B4/8	
*ALL			



RF ADJUST MODE  
A13: PLAY PLL

Auto Adjust (Push SET)

ch	RSLT	ch	RSLT
A1/5	OK	B1/5	OK
A2/6	OK	B2/6	OK
A3/7	OK	B3/7	OK
A4/8	OK	B4/8	OK
*ALL OK			

- (4) ↓ Confirm  
(5) ↓ MENU  
(6) ↓ Data save

\*A1F: NV-RAM CONTROL

## A17 : A10-A16 ALL ADJUST

..... (For DNW-A100/A100P)

## A17 : A11-A16 ALL ADJUST

.... (For DNW-A50/A45/A50P/A45P)

These menus execute the automatic adjustment of A10 (A11) to A16 described previously in the following order.

No.	DNW-A100/A100P	DNW-A50/A45/A50P/A45P
1	A13: PLAY PLL	A13: PLAY PLL
2	A16: A/D GAIN	A16: A/D GAIN
3	A10: EQUALIZER(1/2)	A11: EQUALIZER
4	A11: EQUALIZER(2/2)	A14: FWD PLL
5	A14: FWD PLL	A15: REV PLL
6	A15: REV PLL	A12: REC CURRENT
7	A12: REC CURRENT	—

### To execute the automatic adjustment

- (1) Insert alignment tape SR5-1 (for a 525/60 system) or SR5-1P (for a 625/50 system) that was rewound to the beginning of the tape.

#### Note

Be sure to use the specified alignment tape.

If the specified cassette tape is not used, the adjustment cannot be performed properly.

- (2) Press the SET button.
  - The automatic adjustment in a PB system is initiated when the SET button is pressed.
  - The superimpose picture during adjustment is displayed in the same way as when the adjustment is executed independently. If message “Condition NG” or “Auto Adjust Failure” is not displayed, the adjustment in a PB system is completed after about 6 seconds (DNW-A100/A100P) or about 4 seconds (DNW-A50/A45/A50P/A45P).

The alignment tape is rewound when the adjustment is completed. Message “Set a blank tape and push SET button for REC CURRENT adjustment” is displayed on the superimpose picture.
- (3) Eject the alignment tape.
- (4) Insert the cassette tape on which recording is possible.

- (5) Press the SET button.

- The automatic adjustment (A12 : REC CURRENT) in a REC system is initiated when the SET button is pressed.
- The superimpose picture during adjustment is displayed in the same way as when the adjustment is executed independently. If message “Condition NG” or “Auto Adjust Failure” is not displayed, the adjustment in a REC system is completed after several seconds.

- (6) Confirm that message “Auto Adjust Complete” is displayed on the superimpose picture.

- Confirm the adjustment data from each menu.

#### Note

If abnormality exists during adjustment, message “Condition NG” or “Auto Adjust Failure” is displayed on the superimpose picture in the same way as when the adjustment is executed independently. The automatic adjustment stops in the adjustment menu. Message “A17-ALL FAIL” or “A17-ALL NG” is displayed in a time data display area.

- Refer to the “For Condition NG/Automatic Adjustment Failure” on page 4-58 when message “Condition NG” or “Auto Adjust Failure” is displayed.



To confirm the adjustment data, press the STOP button.

- (7) Press the MENU button.
  - To execute readjustment, press the MENU button. Select again once the menu is completed.
- (8) To save the adjustment data in NV-RAM, execute SAVE ALL ADJUST DATA in an A1F : NV-RAM CONTROL menu.

To return the adjustment data to the state before adjustment, execute ALL DATA PREVIOUS in an A1F : NV-RAM CONTROL menu.

#### Note

Do not save the adjustment data in NV-RAM when abnormality is found during automatic adjustment (when message “Auto Adjust Failure” or “Condition NG” is displayed).

Example of display and operation  
Example in DNW-A100/A100P

Superimpose picture

```
RF ADJUST MODE
A17:A10-A17 ALL ADJUST

Auto Adjust (Push SET)
```

Time data display area

*R17-PUSH SET BTN*

- (1) ↓ Insert SR5-1/SR5-1P  
(2) ↓ **SET**

```
RF ADJUST MODE
A17:A10-A17 ALL ADJUST
A13:PLAY PLL
Auto Adjusting

ch RSLT      ch RSLT
A1/5         B1/5
A2/6         B2/6
A3/7         B3/7
A4/8         B4/8
*ALL
```

↓  
(omitted)  
↓

```
RF ADJUST MODE
A17:A10-A17 ALL ADJUST
A16:A/D GAIN
Auto Adjusting

ch RSLT      ch RSLT
A1/5         B1/5
A2/6         B2/6
A3/7         B3/7
A4/8         B4/8
*ALL
```

↓  
(omitted)  
↓

```
RF ADJUST MODE
A17:A10-A17 ALL ADJUST
A10:EQUALIZER (1/2)
Auto Adjusting

ch RSLT      ch RSLT
A1           B1
A3           B3
A5           B5
A7           B7
*ALL
```

↓  
(omitted)  
↓  
(continue)

(continued)

↓

```
RF ADJUST MODE
A17:A10-A17 ALL ADJUST

Set a blank tape and
push SET button for
REC CURRENT adjustment.
```

- (3) ↓ **EJECT**  
(4) ↓ Insert a recording tape  
(5) ↓ **SET**

```
RF ADJUST MODE
A17:A10-A17 ALL ADJUST
A12:REC CURRENT
Auto Adjusting

ch RSLT      ch RSLT
A           B
*ALL
```

↓  
(omitted)  
↓

```
RF ADJUST MODE
A17:A10-A17 ALL ADJUST

Auto Adjust Complete
```

- (6) ↓ Confirm  
(7) ↓ **SET**  
(8) ↓ Data save

*\*A1F:NV-RAM CONTROL*

*R17-ALL OK*

## For Condition NG/Automatic Adjustment Failure

Confirm in the procedure below when message “Condition NG” or “Auto Adjust Failure” is displayed during execution of adjustment menus A10 to A17.

- (1) Confirm whether the specified alignment tape is used.  
If the specified alignment tape is not used, execute the automatic adjustment by the specified one.  
SR5-1 for 525/60 system, SR5-1P for 625/50 system
- (2) Clean the drum (video heads) referring to the “For Condition NG” in Section 4-2-3.  
This operation is not required when the drum has been already cleaned.
- (3) Perform the automatic adjustment menu A17 when message “Condition NG” or “Auto Adjust Failure” is displayed during execution of menus other than menu A17 or A13.  
If no abnormality is found, the adjustment is completed.

If the message “Condition NG” is displayed, the possible cause below are considered.

- VTR’s servo system adjustment defect or circuit defect
  - ⇒ Readjust the servo system. (A0 : SERVO ADJUST)
  - ⇒ Check the servo system. (C03 : REEL/CAPSTAN MOTOR & FG CHECK)
- RF system adjustment defect
  - ⇒ Readjust the RF system. (A1 : RF ADJUST)
- Worn PB head in the drum assembly
  - ⇒ After confirming the hours meter (H02 : DRUM RUNNING HOURS), replace the upper drum assembly as required. (Refer to the maintenance manual part 2, volume-1.)
- Adjustment defect in tape transport system or component part installation defect
  - ⇒ Readjust the tape transport system or reinstall the parts. (Refer to the maintenance manual part 2, volume-1.)
- EQ-56 board defect
- Drum assembly defect

Or if the message “Auto Adjust Failure” is displayed, the possible above and following cause are considered.

- Brush slip ring assembly defect or its part installation/connection defect
  - ⇒ Replace or reinstall the brush slip ring assembly. (Refer to the maintenance manual part 2, volume-1.)
- Harness (between EQ-56 board and drum assembly) connection defect

## A1F : NV-RAM CONTROL

The A1F : NV-RAM CONTROL menu is used to save the RF adjustment data adjusted in the RF ADJUST mode in NV-RAM. The adjustment data of A30 : EQ VR adjusted in the BETACAM PB ADJUST mode is also saved in this menu.

The current adjustment data can return to the former state when “ALL DATA PREVIOUS” is selected before the adjustment data is saved in NV-RAM.

### Notes

- Do not save the adjustment data in NV-RAM when abnormality is found during automatic adjustment (when message “Auto Adjust Failure” or “Condition NG” is displayed).
- When the adjustment data was not stored in this menu, it returns to the state before adjustment if the power is turned off.

### To execute the menu

- (1) Turn the search dial and move the \* mark on the superimpose picture as described below.  
To save the adjustment data after adjustment:  
⇒ “SAVE ALL ADJUST DATA”  
To return to the adjustment data before adjustment  
⇒ “ALL DATA PREVIOUS”
  - In a time data display area, “SAVE ALL ADJUST DATA” and “ALL DATA PREVIOUS” are displayed as messages “SAVE ALL ADJUST” and “ALL DATA PREVIOUS”, respectively.
- (2) Press the SET button.
  - The data transmission is initiated when the SET button is pressed.
  - Message “Saving ...” or “Loading ...” is displayed on the superimpose picture, and message “SAVING” or “LOADING” is displayed in the time data display area.
- (3) Confirm that the data transmission is completed.
  - After data transmission is completed, message “Save Complete” or “Load Complete” is displayed on the superimpose picture, and message “SAVE COMPLETE” or “LOAD COMPLETE” is displayed in the time data display area.
- (4) Press the MENU button to terminate the menu.



## Example of display and operation (In data save)

Superimpose picture

RF ADJUST MODE  
 A1F: NV-RAM CONTROL  
 \*NO OPERATION  
 \*SAVE ALL ADJUST DATA  
 ALL DATA PREVIOUS

Time data display area

NO OPERATION

(1) ↓ DIAL (O)

RF ADJUST MODE  
 A1F: NV-RAM CONTROL  
 NO OPERATION  
 \*SAVE ALL ADJUST DATA  
 ALL DATA PREVIOUS

SAVE ALL ADJUST

(2) ↓ SET

RF ADJUST MODE  
 A1F: NV-RAM CONTROL  
 Saving ...

SAVING

↓

RF ADJUST MODE  
 A1F: NV-RAM CONTROL  
 Save Complete

SAVE COMPLETE

(3) ↓ Confirm

(4) ↓ MENU

## 4-2-9. AUDIO/VIDEO ADJUST Mode (A2)

The A2 : AUDIO/VIDEO ADJUST mode is used to adjust the audio and video systems.

This unit has eight menus (including the menus displayed when options are installed).

In an A23 : CP VR menu, four submenus (including the submenu displayed when the BKNW-103 option is installed) are available for DNW-A100/A100P, and two submenus are available for DNW-A50/A45/A50P/A45P.

### A2 : AUDIO/VIDEO ADJUST

- A20 : VPR VR
- A21 : AD VR ----- For BKNW-104
- A22 : AD VR (LOOP) ----- For BKNW-104
- A23 : CP VR
  - A231 : SDI ENC VCO
  - A232 : SDI DEC VCO
  - A233 : SDTI ENC VCO -- For DNW-A100/A100P only
  - A234 : SDTI DEC VCO -- For BKNW-103 for DNW-A100/A100P only
- A24 : INPUT CF DETECT ----- For BKDW-505/506
- A25 : DEC VR ----- For BKDW-505/506
- A26 : DEC VR (LOOP) ----- For BKDW-505/506
- A2F : NV-RAM CONTROL

### Menu Tree of Audio/Video Systems Adjustment Mode

#### CAUTION

Do not change the adjustment data carelessly. This may cause a trouble. For the actual adjustment, refer to the adjustment method described in Section 1 or 6 of this manual or the maintenance manual part 2, volume-1.

If you have changed the adjustment data carelessly, execute ALL DATA PREVIOUS in an A2F : NV-RAM CONTROL menu or turn off the power of this unit without selecting an A2F : NV-RAM CONTROL menu. Never execute SAVE ALL ADJUST DATA.

#### Note

BKDW-505 is used exclusively for an NTSC system (525/60 system). In a 625/50 system, BKDW-505 does not function normally.

BKDW-506 is used exclusively for a PAL system (625/50 system). In a 525/60 system, BKDW-506 does not function normally.

The adjustment menus other than submenus of A23 and menu A24 are used for manual adjustment.

In the submenus of A23 and menu A24, automatic adjustment (AUTO) or manual adjustment (MANUAL) can be selected (except A234).

For the automatic adjustment, refer to the operation example described in each menu.

### To change the adjustment data manually

- (1) Turn the search dial on the superimpose picture and move the \* mark to the item to be adjusted.  
Turn the search dial in the time data display area and display the item to be adjusted.
- (2) Turn the search dial while pressing the JOG button.  
The adjustment data then increases or decreases.

### To execute the automatic adjustment

- (1) Turn the search dial on the superimpose picture and move the \* mark to “MANUAL”.  
Turn the search dial in the time data display area and display “MANUAL”.
- (2) Turn the search dial in FORWARD (⤵) direction while pressing the JOG button. Message “Auto (Push SET Button)” is then displayed on the superimpose picture, and message “PUSH SET” is displayed in the time data display area.
- (3) The automatic adjustment is executed when the SET button is pressed.
  - Only the display on the superimpose picture changes as described below. The displayed data value also changes.

Auto adjusting .. :            Automatic adjustment is in progress.

Auto Adjust Complete : Automatic adjustment is completed.

Auto Adjust Failure :    Automatic adjustment fails.

### To return the adjustment data to the former state

Execute ALL DATA PREVIOUS in an A2F : NV-RAM CONTROL menu.

#### Note

The current adjustment data can not return to the former state after executing SAVE ALL DATA ADJUST DATA.

### To save the adjustment data

Execute SAVE ALL ADJUST DATA in an A2F : NV-RAM CONTROL menu.

## A20 : VPR VR

AUDIO/VIDEO ADJUST MODE		
A20 : VPR VR		
*REF 1ST FLD DET	80	
VIDEO 1/2 LEVEL	80	
VIDEO 3 LEVEL	80	
Y OUTPUT LEVEL	80	
R-Y OUTPUT LEVEL	80	
B-Y OUTPUT LEVEL	80	
B-CAM R-Y OUT LEVEL	80	
B-CAM B-Y OUT LEVEL	80	
INT 4FSC FREQ	80	

AUDIO/VIDEO ADJUST MODE		
A20 : VPR VR		
*VIDEO 1/2 LEVEL	80	
VIDEO 3 LEVEL	80	
Y OUTPUT LEVEL	80	
R-Y OUTPUT LEVEL	80	
B-Y OUTPUT LEVEL	80	

### (525/60 System) DNW-A100/A50/A45 (625/50 System)

AUDIO/VIDEO ADJUST MODE		
A20 : VPR VR		
*REF 1ST FLD DET	80	
VIDEO 1/2 LEVEL	80	
VIDEO 3 LEVEL	80	
Y OUTPUT LEVEL	80	
R-Y OUTPUT LEVEL	80	
B-Y OUTPUT LEVEL	80	
B-CAM R-Y OUT LEVEL	80	
B-CAM B-Y OUT LEVEL	80	
INT 4FSC FREQ	80	

AUDIO/VIDEO ADJUST MODE		
A20 : VPR VR		
*VIDEO 1/2 LEVEL	80	
VIDEO 3 LEVEL	80	
Y OUTPUT LEVEL	80	
R-Y OUTPUT LEVEL	80	
B-Y OUTPUT LEVEL	80	
B-CAM R-Y OUT LEVEL	80	
B-CAM B-Y OUT LEVEL	80	

### (625/50 System) DNW-A100P/A50P/A45P (525/60 System)

This menu is used to adjust the reference signal and analog video output systems on the VPR-17 board. In 525/60 and 625/50 systems, the displayed adjustment items differ.

The adjustment item below can be adjusted in only a 525/60 system (DNW-A100/A50/A45) or a 625/50 system (DNW-A100P/A50P/A45P). If this item is not adjusted, failure also occurs in the other system.

Adjustment item	Description
REF 1ST FLD DET	First-field detection timing of reference signal
INT 4FSC FREQ	Free-running frequency of internal reference signal 4fsc

The adjustment item below must be adjusted in both 525/60 and 625/50 systems.

Adjustment item	Description
VIDEO 1/2 LEVEL	Composite video output (1/2) level
VIDEO 3 LEVEL	Composite video output (3) level
Y OUTPUT LEVEL	Component video Y output level
R-Y OUTPUT LEVEL	Component video R-Y output level
B-Y OUTPUT LEVEL	Component video B-Y output level

The adjustment item below is used exclusively for a 525/60 system.

Adjustment item	Description
B-CAM R-Y OUT LEVEL	R-Y output (Betacam) level
B-CAM B-Y OUT LEVEL	B-Y output (Betacam) level

## A21 : AD VR

AUDIO/VIDEO ADJUST MODE A21:AD VR	
*Y INPUT LEVEL	80
R-Y INPUT LEVEL	80
B-Y INPUT LEVEL	80
Y INPUT PHASE	80
Y/R-Y INPUT DELAY	80
Y/B-Y INPUT DELAY	80
B-CAM Y IN LEVEL	80
B-CAM R-Y IN LEVEL	80
B-CAM B-Y IN LEVEL	80

In 525/60 system

AUDIO/VIDEO ADJUST MODE A21:AD VR	
*Y INPUT LEVEL	80
R-Y INPUT LEVEL	80
B-Y INPUT LEVEL	80
Y INPUT PHASE	80
Y/R-Y INPUT DELAY	80
Y/B-Y INPUT DELAY	80
Y FREQ COMP	80
R-Y FREQ COMP	80
B-Y FREQ COMP	80

In 625/50 system

Y FREQ COMP	80
R-Y FREQ COMP	80
B-Y FREQ COMP	80

Their items are displayed by scroll in 525/60 system

This menu is used to adjust the component video input system. It is displayed when the BKNW-104 option is installed.

The 525/60 system contains a lot of adjustment items. Turn the search dial to scroll the adjustment item portion on the superimpose picture.

The adjustment item below is adjusted in either of a 525/60 or 625/50 system.

Adjustment item	Description
Y INPUT LEVEL	Y input level
R-Y INPUT LEVEL	R-Y input level
B-Y INPUT LEVEL	B-Y input level
Y INPUT PHASE	Y input phase
Y/R-Y INPUT DELAY	R-Y input delay compensation
Y/B-Y INPUT DELAY	B-Y input delay compensation
Y FREQ COMP	Y input frequency response
R-Y FREQ COMP	R-Y input frequency response
B-Y FREQ COMP	B-Y input frequency response

The adjustment item below is used exclusively for a 525/60 system.

Adjustment item	Description
B-CAM Y IN LEVEL	Y input (Betacam) level
B-CAM R-Y IN LEVEL	R-Y input (Betacam) level
B-CAM B-Y IN LEVEL	B-Y input (Betacam) level

### Note

The adjustment data in an A21 : AD VR menu is used in common with an A22 : AD VR (LOOP) menu.

## A22 : AD VR(LOOP)

AUDIO/VIDEO ADJUST MODE A22:AD VR (LOOP)	
*Y INPUT LEVEL	80
R-Y INPUT LEVEL	80
B-Y INPUT LEVEL	80
Y INPUT PHASE	80
Y/R-Y INPUT DELAY	80
Y/B-Y INPUT DELAY	80
B-CAM Y IN LEVEL	80
B-CAM R-Y IN LEVEL	80
B-CAM B-Y IN LEVEL	80

In 525/60 system

AUDIO/VIDEO ADJUST MODE A22:AD VR (LOOP)	
*Y INPUT LEVEL	80
R-Y INPUT LEVEL	80
B-Y INPUT LEVEL	80
Y INPUT PHASE	80
Y/R-Y INPUT DELAY	80
Y/B-Y INPUT DELAY	80
Y FREQ COMP	80
R-Y FREQ COMP	80
B-Y FREQ COMP	80

In 625/50 system

Y FREQ COMP	80
R-Y FREQ COMP	80
B-Y FREQ COMP	80

Their items are displayed by scroll in 525/60 system

This menu is used to adjust the component video input system. It is displayed when the BKNW-104 option is installed.

In this menu, the most suitable signal for adjustment is output from an internal video test signal generator (refer to the table below), and the component video input system can be adjusted with the multi-loop function activated. The adjustment item is the same as for A21: AD VR.

### Note

The adjustment data in an A22 : AD VR (LOOP) menu is used in common with an A21 : AD VR menu.

Adjustment item	Test signal
Y INPUT LEVEL	100% Color Bars
R-Y INPUT LEVEL	
B-Y INPUT LEVEL	
Y INPUT PHASE	NTC7 (NTSC): 525/60 system Line330 (625): 625/50 system
Y/R-Y INPUT DELAY	Bowtie
Y/B-Y INPUT DELAY	
B-CAM Y IN LEVEL	75% Color Bars
B-CAM R-Y IN LEVEL	
B-CAM B-Y IN LEVEL	
Y FREQ COMP	Multi Burst
R-Y FREQ COMP	
B-Y FREQ COMP	

### A23 : CP VR

```
AUDIO/VIDEO ADJUST MODE
A23:CP VR

*A231:SDI ENC VCO
A232:SDI DEC VCO
A233:SDTI ENC VCO
A234:SDTI DEC VCO
```

**DNW-A100/A100P  
with BKNW-103**

```
AUDIO/VIDEO ADJUST MODE
A23:CP VR

*A231:SDI ENC VCO
A232:SDI DEC VCO
```

**DNW-A50/A45/A50P/A45P**

This menu is used to adjust the VCO free-running frequency of SDI and SDTI input/output interfaces.

Four submenus (including the submenus displayed when the BKNW-103 option is installed) are available for DNW-A100/A100P, and two submenus are available for DNW-A50/A45/A50P/A45P.

#### A231 : SDI ENC VCO

This submenu is used for an SDI output interface (SDI encoder).

Automatic or manual adjustment can be selected.

#### A232 : SDI DEC VCO

This submenu is used for an SDI input interface (SDI decoder).

Automatic or manual adjustment can be selected.

#### A233 : SDTI ENC VCO

This submenu is used for an SDTI output interface (SDTI encoder). It is used exclusively for DNW-A100/A100P.

Automatic or manual adjustment can be selected.

#### A234 : SDTI DEC VCO

This submenu is used for an SDTI input interface (SDTI decoder). It is used exclusively for DNW-A100/A100P.

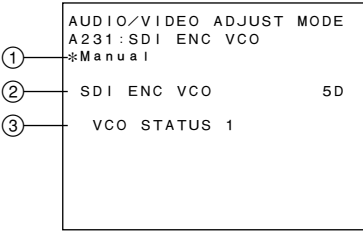
This submenu is displayed when the BKNW-103 option is installed.

#### Note

In the submenu A234, change the adjustment data manually but be in vain.

For the SDTI DEC VCO adjustment, needs the RV adjustment of the CP-300 board (BKNW-103). Refer to “4-2. CP-300 Board (BKNW-103)” of the maintenance manual part 2, volume-1.

### Description of superimpose picture



**Ex. A231 : SDI ENC VCO**

- ① The adjustment mode (manual and automatic) or the messages during automatic adjustment are displayed in this line. (except A234)

Manual : Adjustment mode is set to the manual adjustment.

Auto (Push SET Button) : Press the SET button to initiate the automatic adjustment.

Auto Adjusting ... : Automatic adjustment is in progress.

Auto adjust Complete : Automatic adjustment is completed.

Auto Adjust Failure : Automatic adjustment fails.

#### Notes

- The adjustment data can be manually changed even if message “Auto (Push SET Button)” is displayed.
- For the submenu A234, this line is not displayed.

- ② The adjustment item and adjustment data value are displayed in this line.

- ③ The VCO status is displayed as “0” or “1”.

### Change of adjustment mode (except A234)

The relation between the adjustment mode and display is shown in the table below.

Adj. mode	Superimpose picture	Time data display area
Manual adjustment	Manual	MANUAL
Automatically adjustable	Auto (Push SET Button)	PUSH SET

- (i) Turn the search dial in REVERSE (↶) direction and move the \* mark to line ① on the superimpose picture. (In a time data display area, “MANUAL” or “PUSH SET” is displayed.)
- (ii) Turn the search dial while pressing the JOG button.
- Manual ⇨ Automatic: **JOG** + DIAL (↶)
- Manual ⇩ Automatic: **JOG** + DIAL (↶)

### To execute the automatic adjustment (except A234)

- (1) Display “Auto (Push SET Button)” on the superimpose picture and “PUSH SET” in the time data display area referring to the “Change of adjustment mode” described above.
- (2) The automatic adjustment is executed when the SET button is pressed.
  - The display on the superimpose picture changes to “Auto Adjusting...”. The displayed data value also changes.
  - The display in the time data display area does not change.
- (3) Confirm the automatic adjustment completion on the superimpose picture.
  - Message “Auto Adjust Complete” is displayed when the automatic adjustment is completed.

#### Note

Refer to the “For automatic adjustment failure (except A234)” below when message “Auto Adjust Failure” is displayed.

- (4) To terminate the menu, press the MENU button.  
To execute the automatic adjustment again in this menu, return to step (2).
- (5) To save the adjustment data in NV-RAM, execute SAVE ALL ADJUST DATA in an A2F : NV-RAM CONTROL menu.  
To return the adjustment data to the state before adjustment, execute ALL DATA PREVIOUS in an A2F : NV-RAM CONTROL menu.

### For automatic adjustment failure (except A234)

Confirm that no abnormality exists in the harness and flat cable connecting the CP-297 and MB-648 boards. If no abnormality is found in the connection, the CP-297 board or DIF-42 board is considered to be defective.

### Caution during manual adjustment (except A234)

Measuring equipment is required when performing the manual adjustment. For the actual manual adjustment, refer to the adjustment method described in Section 3 of the maintenance manual part 2, volume-1.

#### Note

For the data changing, refer to the “To change the adjustment data manually” on page 4-60.

### Example of display and operation Example of A231 : SDI ENC VCO

Superimpose picture

```
AUDIO/VIDEO ADJUST MODE
A231:SDI ENC VCO
*Manual

SDI ENC VCO          74

VCO STATUS 0
```

Time data display area

MANUAL

(1) ↓ **JO** + DIAL (○)

```
AUDIO/VIDEO ADJUST MODE
A231:SDI ENC VCO
*Auto (Push SET button)

SDI ENC VCO          74

VCO STATUS 0
```

PUSH SET

(2) ↓ **SET**

```
AUDIO/VIDEO ADJUST MODE
A231:SDI ENC VCO
*Auto Adjusting ...

SDI ENC VCO          00

VCO STATUS 0
```

PUSH SET

↓  
(omitted)  
↓

```
AUDIO/VIDEO ADJUST MODE
A231:SDI ENC VCO
*Auto Adjust Complete

SDI ENC VCO          5C

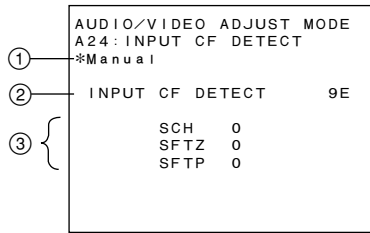
VCO STATUS 1
```

PUSH SET

(3) ↓ Confirm  
(4) ↓ **MEN**  
(5) ↓ **MEN**  
↓ Data save

```
*A2F:NV-RAM CONTROL
```

A24 : INPUT CF DETECT



This menu is used to adjust the color frame detection timing of a composite video input signal. It is displayed when the BKDW-505/506 option is installed. Preparation (refer to Section 4 in the maintenance manual part 2, volume-1) is required for the adjustment.

Note

BKDW-505 is used exclusively for an NTSC system (525/60 system). In a 625/50 system, BKDW-505 does not function normally.  
BKDW-506 is used exclusively for a PAL system (625/50 system). In a 525/60 system, BKDW-506 does not function normally.

Description of superimpose picture

- ① The adjustment mode (manual and automatic adjustments) or the messages during automatic adjustment are displayed in this line.
- Manual : Adjustment mode is set to the manual adjustment.
- Auto (Push SET Button): Press the SET button to initiate the automatic adjustment.
- Auto Adjusting ... : Automatic adjustment is in progress.
- Auto adjust Complete : Automatic adjustment is completed.
- Auto Adjust Failure : Automatic adjustment fails.

Note

The adjustment data can be manually changed even if message “Auto (Push SET Button)” is displayed.

- ② The adjustment item and adjustment data value are displayed in this line.
- ③ Each status is displayed as “0” or “1”.
- 0: When the specification is not satisfied  
1: When the specification is satisfied  
(For SFTP, the status is displayed in alternate “0” and “1” when the specification is satisfied.)

Change of adjustment mode

The relation between the adjustment mode and display is shown in the table below.

Adj. mode	Superimpose picture	Time data display area
Manual adjustment	Manual	MANUAL
Automatically adjustable	Auto (Push SET Button)	PUSH SET

- (i) Turn the search dial in REVERSE (↶) direction and move the \* mark to line ① on the superimpose picture. (In a time data display area, “MANUAL” or “PUSH SET” is displayed.)
- (ii) Turn the search dial while pressing the JOG button.
- Manual ⇔ Automatic: **JOG** + DIAL (↻)  
Manual ⇐ Automatic: **JOG** + DIAL (↻)

To execute the automatic adjustment

- (1) Display “Auto (Push SET Button)” on the superimpose picture and “PUSH SET” in the time data display area referring to the “Change of adjustment mode” described above.
- (2) The automatic adjustment is executed when the SET button is pressed.
- The display on the superimpose picture changes to “Auto Adjusting...”. The displayed data value also changes.  
The display in the time data display area does not change.
- (3) Confirm the automatic adjustment completion and each status on the superimpose picture.
- Message “Auto Adjust Complete” is displayed when the automatic adjustment is completed.  
Status for SCH and SFTZ are displayed as “1”.  
For SFTP is displayed in alternate “0” and “1”.

Note

If the preparation for adjustment is not proper, message “Auto Adjust Failure” is displayed.

- (4) To terminate the menu, press the MENU button.  
To execute the automatic adjustment again in this menu, return to step (2).
- (5) To save the adjustment data in NV-RAM, execute SAVE ALL ADJUST DATA in an A2F : NV-RAM CONTROL menu.  
To return the adjustment data to the state before adjustment, execute ALL DATA PREVIOUS in an A2F : NV-RAM CONTROL menu.

Example of display and operation

Superimpose picture

```
AUDIO/VIDEO ADJUST MODE
A24: INPUT CF DETECT
*Manual

INPUT CF DETECT      9E

SCH      0
SFTZ     0
SFTP     0
```

Time data display area

MANUAL

Caution during manual adjustment

Confirm the adjustment data range in which the SCH status is set to “1” and set the adjustment data to the intermediate value when performing the manual adjustment.

Note

For the manual adjustment, refer to the “To change the adjustment data manually” on page 4-60.

(1) ↓ JOG + DIAL(○)

```
AUDIO/VIDEO ADJUST MODE
A24: INPUT CF DETECT
*Auto (Push SET button)

INPUT CF DETECT      9E

SCH      0
SFTZ     0
SFTP     0
```

PUSH SET

(2) ↓ SET

```
AUDIO/VIDEO ADJUST MODE
A24: INPUT CF DETECT
*Auto Adjusting ...

INPUT CF DETECT      00

SCH      0
SFTZ     0
SFTP     0
```

PUSH SET

↓  
(omitted)  
↓

```
AUDIO/VIDEO ADJUST MODE
A24: INPUT CF DETECT
*Auto Adjust Complete

INPUT CF DETECT      85

SCH      1
SFTZ     1
SFTP     0
```

PUSH SET

(3) ↓ Confirm  
(4) ↓ MENU  
(5) ↓ MENU  
↓ Data save

\* A2F : NV-RAM CONTROL

A25 : DEC VR

AUDIO/VIDEO ADJUST MODE		
A25 : DEC VR		
*VIDEO GAIN		80
AGC VIDEO GAIN		80
VIDEO FREQ COMP		80

This menu is used to adjust the composite video input system. It is displayed when the BKDW-505/506 option is installed.

**Note**

BKDW-505 is used exclusively for an NTSC system (525/60 system). In a 625/50 system, BKDW-505 does not function normally.

BKDW-506 is used exclusively for an NTSC system (625/50 system). In a 525/60 system, BKDW-506 does not function normally.

Adjustment item	Description
VIDEO GAIN	Composite video input level (During AGC OFF setting)
AGC VIDEO GAIN	Composite video input level (During AGC ON setting)
VIDEO FREQ COMP	Composite video input frequency response

**Note**

The adjustment data in an A25 : DEC VR menu is used in common with the same adjustment item in an A26 : DEC VR (LOOP) menu.

A26 : DEC VR (LOOP)

AUDIO/VIDEO ADJUST MODE		
A26 : DEC VR (LOOP)		
*VIDEO GAIN		80
VIDEO FREQ COMP		80

This menu is used to adjust the composite video input system. It is displayed when the BKDW-505/506 option is installed.

The most suitable signal (refer to the table below) for adjustment is output from an internal video test signal generator, and the composite video input system can be adjusted with the multi-loop function activated.

Adjustment item	Test signal
VIDEO GAIN	100% Color Bars
VIDEO FREQ COMP	Multi Burst

**Note**

The adjustment data in an A26 : DEC VR (LOOP) menu is used in common with the same adjustment item in an A25 : DEC VR menu.



## A2F : NV-RAM CONTROL

The A2F : NV-RAM CONTROL menu is used to save the audio/video adjustment data adjusted in the AUDIO/VIDEO ADJUST mode in NV-RAM.

The current adjustment data can return to the state before adjustment when “ALL DATA PREVIOUS” is selected before the adjustment data is saved in the NV-RAM.

### Note

When the adjustment data was not stored in this menu, it returns to the state before adjustment if the power is turned off.

### To execute the menu

- (1) Turn the search dial and move the \* mark on the superimpose picture as described below.  
To save the adjustment data after adjustment  
⇒ “SAVE ALL ADJUST DATA”  
To return to the adjustment data before adjustment  
⇒ “ALL DATA PREVIOUS”
  - In a time data display area, “SAVE ALL ADJUST DATA” and “ALL DATA PREVIOUS” are displayed as messages “SAVE ALL ADJUST” and “ALL DATA PREVIOUS”, respectively.
- (2) Press the SET button.
  - The data transmission is initiated when the SET button is pressed.
  - Message “Saving...” or “Loading...” is displayed on the superimpose picture, and message “SAVING” or “LOADING” is displayed in the time data display area.
- (3) Confirm that the data transmission is completed.
  - After data transmission is completed, message “Save Complete” or “Load Complete” is displayed on the superimpose picture, and message “SAVE COMPLETE” or “LOAD COMPLETE” is displayed in the time data display area.
- (4) Press the MENU button to terminate the menu.

### Example of display and operation (In data save)

Superimpose picture

```
AUDIO/VIDEO ADJUST MODE
A2F:NV-RAM CONTROL

*NO OPERATION
*SAVE ALL ADJUST DATA
ALL DATA PREVIOUS
```

Time data display area

NO OPERATION

(1) ↓ DIAL (○)

```
AUDIO/VIDEO ADJUST MODE
A2F:NV-RAM CONTROL

NO OPERATION
*SAVE ALL ADJUST DATA
ALL DATA PREVIOUS
```

SAVE ALL ADJUST

(2) ↓ SET

```
AUDIO/VIDEO ADJUST MODE
A2F:NV-RAM CONTROL

Saving ...
```

SAVING

↓

```
AUDIO/VIDEO ADJUST MODE
A2F:NV-RAM CONTROL

Save Complete
```

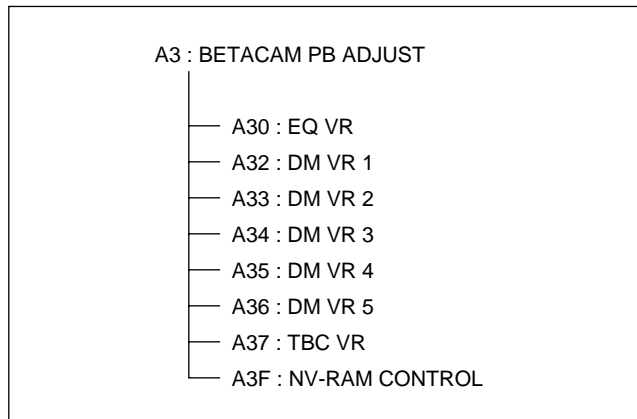
SAVE COMPLETE

(3) ↓ Confirm

(4) ↓ MENU

## 4-2-10. BETACAM PB ADJUST Mode (A3)

The A3 : BETACAM PB ADJUST mode is used to adjust the PB system based on a Betacam/Betacam SP format. This mode contains the eight menus below.



Menu Tree of BETACAM PB Adjustment Mode

### CAUTION

Do not change the adjustment data carelessly. This may cause a trouble. For the actual adjustment, refer to the adjustment method described in Section 6 of this manual or the maintenance manual part 2, volume-1.  
 If you have changed the adjustment data carelessly, execute ALL DATA PREVIOUS in an A3F : NV-RAM CONTROL menu or turn off the power of this unit without selecting an A3F : NV-RAM CONTROL menu.  
 Never execute SAVE ALL ADJUST DATA.

### Note

Betacam/Betacam SP PB function of DNW-A100/A50/A45 is for NTSC (525/60) system only.  
 Betacam/Betacam SP PB function of DNW-A100P/A50P/A45P is for PAL (625/50) system only.

### To change the adjustment data manually

- Turn the search dial on the superimpose picture and move the \* mark to the adjustment item.  
 Turn the search dial in the time data display area and display the item to be adjusted.
- Turn the search dial while pressing the JOG button.  
 The adjustment data then increases or decreases.

### To return the adjustment data to the former state

Execute ALL DATA PREVIOUS in an A3F : NV-RAM CONTROL menu.

### Note

The current adjustment data can not return to the former state after executing SAVE ALL DATA ADJUST DATA.

### To save the adjustment data

Execute SAVE ALL ADJUST DATA in an A3F : NV-RAM CONTROL menu.

### Note

In a time data display area, the adjustment item name on the superimpose picture is omitted during display as follows:

RF GAIN           ⇒ GAIN  
 GUARD BAND   ⇒ GUARD  
 METAL           ⇒ M  
 OXIDE           ⇒ O

### A30 : EQ VR

BETACAM PB ADJUST MODE			
A30 : EQ VR			
*RF	GAIN	METAL-Y-A	58
RF	GAIN	METAL-Y-B	59
RF	GAIN	METAL-C-A	48
RF	GAIN	METAL-C-B	4D
RF	GAIN	OXIDE-Y-A	72
RF	GAIN	OXIDE-Y-B	75
RF	GAIN	OXIDE-C-A	5A
RF	GAIN	OXIDE-C-B	5C

This menu is used to adjust the gain of the PB RF amplifier (EQ-56 board) based on a Betacam/Betacam SP format. There are adjustment items for metal and oxide tapes. Each adjustment item is provided proportionally to the number of heads (Y-A, Y-B, C-A, and C-B).

### A32 : DM VR 1

BETACAM PB ADJUST MODE			
A32 : DM VR 1			
*EQ1	METAL-Y-A		7F
EQ1	METAL-Y-B		81
EQ1	METAL-C-A		77
EQ1	METAL-C-B		81
EQ1	OXIDE-Y-A		AD
EQ1	OXIDE-Y-B		AF
EQ1	OXIDE-C-A		94
EQ1	OXIDE-C-B		9D

This menu is used to adjust the frequency characteristics of a primary cosine equalizer (DM-89 board). There are adjustment items for metal and oxide tapes. Each adjustment item is provided proportionally to the number of heads (Y-A, Y-B, C-A, and C-B).

### A33 : DM VR 2

BETACAM PB ADJUST MODE		
A33:DM VR 2		
*MAIN METAL-Y-A		BC
MAIN METAL-Y-B		BC
MAIN METAL-C-A		91
MAIN METAL-C-B		91
MAIN OXIDE-Y-A		A8
MAIN OXIDE-Y-B		A8
MAIN OXIDE-C-A		A0
MAIN OXIDE-C-B		A0

This menu is used to adjust the frequency characteristics of a secondary cosine equalizer (main)(DM-89 board). There are adjustment items for metal and oxide tapes. Each adjustment item is provided proportionally to the number of heads (Y-A, Y-B, C-A, and C-B).

### A34 : DM VR 3

BETACAM PB ADJUST MODE		
A34:DM VR 3		
*SUB METAL-Y-A		A4
SUB METAL-Y-B		A4
SUB METAL-C-A		70
SUB METAL-C-B		70
SUB OXIDE-Y-A		B6
SUB OXIDE-Y-B		B6
SUB OXIDE-C-A		AA
SUB OXIDE-C-B		AA

This menu is used to adjust the frequency characteristics of a secondary cosine equalizer (sub)(DM-89 board). There are adjustment items for metal and oxide tapes. Each adjustment item is provided proportionally to the number of heads (Y-A, Y-B, C-A, and C-B).

### A35 : DM VR 4

BETACAM PB ADJUST MODE		
A35:DM VR 4		
*GUARD BAND METAL-Y		22
GUARD BAND METAL-C		1A
GUARD BAND OXIDE-Y		26
GUARD BAND OXIDE-C		2F
OMC DC METAL-Y		E4
OMC DC METAL-C		D0
OMC DC OXIDE-Y		D0
OMC DC OXIDE-C		D0

This menu is used to adjust the guard band width and to set the DC offset level of an over-modulation compensation circuit. There are adjustment items for metal and oxide tapes. Each adjustment item is provided proportionally to the number of video channels (Y and C).

### A36 : DM VR 5

BETACAM PB ADJUST MODE		
A36:DM VR 5		
*DO TH METAL-Y		1A
DO TH METAL-C		12
DO TH OXIDE-Y		2E
DO TH OXIDE-C		27
ENV-TH-H		20
ENV-TH-L		10

This menu is used to adjust the dropout threshold level and to set the RF envelope threshold level. Metal and oxide tapes are used for the adjustment of a dropout threshold level. The adjustment item is provided proportionally to the number of video channels (Y and C). High (H) and low (L) limits are used for the setting of an RF envelope threshold level.

### A37 : TBC VR

BETACAM PB ADJUST MODE		
A37:TBC VR		
*SQ-Y RZ		4B
SQ-C RZ		6F
VISC PHASE		06

This menu is used to set the read clock timing and the data of a PB VISC phase detection circuit on the TBC-23 board. The adjustment item is provided proportionally to the number of video channels (Y and C) for read clock timing setting.

## A3F : NV-RAM CONTROL

The A3F : NV-RAM CONTROL menu is used to save the Betacam PB adjustment data adjusted in the BETACAM PB ADJUST mode in NV-RAM.

The current adjustment data can return to the state before adjustment when “ALL DATA PREVIOUS” is selected before the adjustment data is recorded in the NV-RAM.

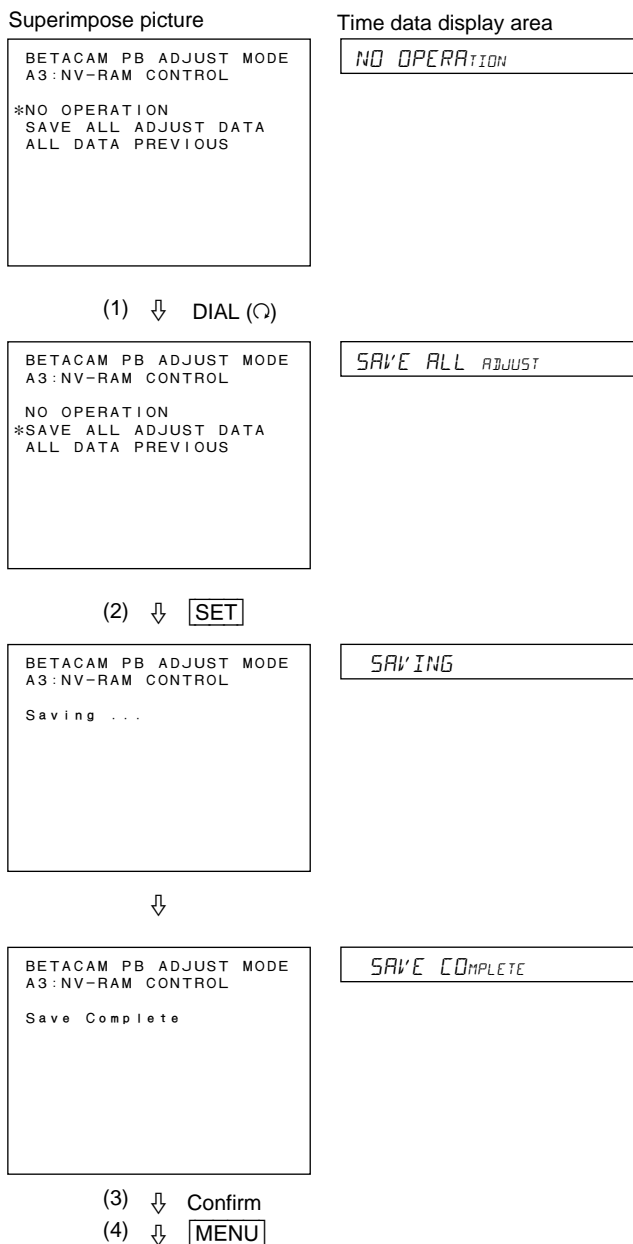
### Note

When the adjustment data was not stored in this menu, it returns to the state before adjustment if the power is turned off.

### To execute the menu

- (1) Turn the search dial and move the \* mark on the superimpose picture as described below.  
To save the adjustment data after adjustment  
⇒ “SAVE ALL ADJUST DATA”  
To return to the adjustment data before adjustment  
⇒ “ALL DATA PREVIOUS”
  - In a time data display area, “SAVE ALL ADJUST DATA” and “ALL DATA PREVIOUS” are displayed as messages “SAVE ALL ADJUST” and “ALL DATA PREVIOUS”, respectively.
- (2) Press the SET button.
  - The data transmission is initiated when the SET button is pressed.
  - Message “Saving...” or “Loading...” is displayed on the superimpose picture, and message “SAVING” or “LOADING” is displayed in the time data display area.
- (3) Confirm that the data transmission is completed.
  - After data transmission is completed, message “Save Complete” or “Load Complete” is displayed on the superimpose picture, and message “SAVE COMPLETE” or “LOAD COMPLETE” is displayed in the time data display area.
- (4) Press the MENU button to terminate the menu.

### Example of display and operation (In data save)



## 4-3. DISK Maintenance Mode (M1)

### 4-3-1. Outline

The DISK maintenance mode is used for the maintenance and check of a hard disk drive. This unit contains the five menus below.

```
DISK MAINTENANCE MODE
*D0:ERROR COUNTER
D1:DEVICE INFO
D2:DIAGNOSIS
D3:INSTALLATION
D4:BLACK INSTALLATION
D5:ZONE CONFIGURATION
D9:DISK CLEANING
```

Disk program and disk master files are closed when the DISK maintenance mode is selected.

#### D0 : ERROR COUNTER

This menu displays the error generation history of a hard disk drive.  
(Refer to Section 4-3-2.)

```
DISK MAINTENANCE MODE
D0:ERROR COUNTER

* [ID-00]
Recoverd          0
Medium            0
Medium (Total)    0
Hardware          0
Others            0
```

#### D1 : DEVICE INFO

This menu displays the device information of a hard disk drive.  
(Refer to Section 4-3-3.)

```
DISK MAINTENANCE MODE
D1:DEVICE INFO

* [ID-00]
Product Name:
SEAGATE ST19171W
Serial No. : LA136291
SCSI Rev   : 02036509
SV ROM Rev : 81718171
SV RAM Rev : 81508150
```

#### Note

This display is one of the displayed examples.

#### D2 : DIAGNOSIS

This menu measures the operation performance of a hard disk drive and displays the result.  
(Refer to Section 4-3-4.)

```
DISK MAINTENANCE MODE
D2:DIAGNOSIS

*OFF
```

#### Note

The ID number indicated in this section corresponds to the SCSI ID number. The hard disk drives incorporated into this unit are assigned to ID-0[ID-00] and ID-1[ID-01]. ID-2[ID-02] and later are assigned to the hard disk drive of a hard disk array unit (the products release is not fixed yet) that is connected to the outside.

#### D3 : INSTALLATION

This menu initializes the hard disk drive when a hard disk drive is connected newly or by replacement.  
(Refer to Section 4-3-5.)

```
DISK MAINTENANCE MODE
*D3:INSTALLATION

[ ID-00] LA136291 ( )
[ ID-01] LA046473 ( )
INITIALIZE all the HDDs
marked above at a time.

-----
Confirm the serial No.!!
Select all HDDs replaced
while showing (MARK).
```

#### Note

This display is one of the displayed examples.

#### D4 : BLACK INSTALLATION

This menu creates a BLACK file in the hard disk.  
(Refer to Section 4-3-6.)

```
DISK MAINTENANCE MODE
D4:BLACK INSTALLATION

*OFF
```

#### D5 : ZONE CONFIGURATION

This menu sets the zone of the hard disk that this unit uses as a current zone.  
(Refer to Section 4-3-7.)

```
DISK MAINTENANCE MODE
D5:ZONE CONFIGURATION

# INTERNAL      (1.5H)
EXT FULL        (6.0H)
EXT HALF-1      (3.0H)
EXT HALF-2      (3.0H)
EXT QTR -1      (1.5H)
EXT QTR -2      (1.5H)
EXT QTR -3      (1.5H)
EXT QTR -4      (1.5H)
<<current: INTERNAL >>
```

#### D9 : DISK CLEANING

This menu cleans the media error portion (defective sector) of a hard disk drive.  
(Refer to Section 4-3-6.)

```
DISK MAINTENANCE MODE
D9:DISK CLEANING

*OFF
```

```
----- Caution -----
All the user data in
the disk will be lost.
After executing this,
DO NOT TURN POWER OFF!
```

### 4-3-2. Error Counter Display Menu (D0)

The D0 : ERROR COUNTER menu is used to display the error generation history (error counter) of a hard disk drive.

The five error counters below are available.

Use the value of these error counters as the reference of hard disk drive replacement or disk cleaning period.

#### Error counters

- Recovered/RECOVERED error counter

This counter displays the number of times when the detected error is normally recovered by the retry operation of a hard disk drive. This counter is used for inspection at the factory. It is not related to the abnormality in a hard disk drive.

- Medium/MEDIUM error counter

This counter displays the number of sectors in which a media error occurs. The detected error is counted when it is not recovered by the retry operation of a hard disk drive. However, the media error is not counted when it is generated in the same sector.

This counter is reset to "0" when disk cleaning (D9) is executed.

#### Note

Picture may be momentarily frozen or sound may be intermitted during REC/PB operation in the disk when a media error occurs in a hard disk.

- Medium(Total)/MEDIUM(T) error counter

This counter displays the total number of sectors in which a media error occurs. This counter is not reset even if disk cleaning (D9) is executed.

If the counter value reads ten or more, replace the hard disk drive corresponding to the ID number. When the counter value reads ten, an image may be frozen or a sound may be interrupted.

- Hardware/HARDWARE error counter

This counter displays the number of times when a hardware error occurs in a hard disk drive. If a hardware error occurs once, replace the hard disk drive corresponding to the ID number.

- Others/OTHERS counter

This counter is used for inspection at the factory. It is not related to the abnormality in a hard disk drive.

#### Menu operation

All error counters in one ID number are superimposed on the video monitor.

The \* mark moves one line at a time when the search dial is turned.

To display the error counters in other ID numbers, turn the search dial again.

In a time data display area, the contents of with the \*-marked line displayed on the superimpose picture is displayed.

#### Note

For the replacement of a hard disk drive incorporated into this unit, refer to Section 5 in the maintenance manual part 2, volume-1.

An HDD installation menu (D3 : INSTALLATION) is activated when the power is turned on after replacement. Perform the initialization for the replaced hard disk drive.

#### Menu termination

Press the MENU button to terminate this menu.

## Example of display and operation (D0)

Superimpose picture

DISK MAINTENANCE MODE	
D0:ERROR COUNTER	
* [ID-00]	
Recovered	0
Medium	0
Medium (Total)	0
Hardware	0
Others	0

↓ DIAL (○)  
 (omitted)

DISK MAINTENANCE MODE	
D0:ERROR COUNTER	
[ID-00]	
Recovered	0
Medium	0
Medium (Total)	0
Hardware	0
*Others	0

↓ DIAL (○)

DISK MAINTENANCE MODE	
D0:ERROR COUNTER	
[ID-01]	
*Recovered	0
Medium	0
Medium (Total)	0
Hardware	0
Others	0

↓ DIAL (○)  
 (omitted)

DISK MAINTENANCE MODE	
D0:ERROR COUNTER	
[ID-01]	
Recovered	0
Medium	0
Medium (Total)	0
Hardware	0
*Others	0

Time data display area

\_ID-00\_

RECOVERED 0

MEDIUM 0

MEDIUM(T) 0

HARDWARE 0

OTHERS 0

\_ID-01\_

RECOVERED 0

MEDIUM 0

MEDIUM(T) 0

HARDWARE 0

OTHERS 0

## 4-3-3. Device Information Display Menu (D1)

The D1 : DEVICE INFO menu is used to display the device information of a hard disk drive.

The displayed device information is as follows:

### Device information

- Product name  
Displays the manufacturer name and model name of a hard disk drive.
- Serial number  
Displays the serial number of a hard disk drive.
- SCSI revision  
Displays the revision of the SCSI interface software in a hard disk drive.
- Servo ROM revision  
Displays the revision of the servo ROM in a hard disk drive.
- Servo RAM revision  
Displays the revision of the servo RAM in a hard disk drive.

### Menu operation

All device information items in one ID number are superimposed on the video monitor.

The \* mark moves by one line at a time when the search dial is turned.

To display the device information in other ID numbers, turn the search dial again.

In a time data display area, the contents of which the \*-marked line displayed on the superimpose picture is displayed.

This menu is terminated when the MENU button is pressed.

### Note

The device information becomes blank when the hard disk drive is not completely activated immediately after the power is turned on. The device information is displayed when the hard disk drive is activated.

### Menu termination

Press the MENU button to terminate this menu.

Example of display and operation (D1)

Superimpose picture

DISK MAINTENANCE MODE  
D1:DEVICE INFO

\*[ID-00]  
Product Name:  
SEAGATE ST19171W  
Serial No. : LA136291  
SCSI Rev : 02036509  
SV ROM Rev : 81718171  
SV RAM Rev : 8150815

↓ DIAL (↻)  
(omitted)  
↓ DIAL (↻)

DISK MAINTENANCE MODE  
D1:DEVICE INFO

[ID-00]  
Product Name:  
SEAGATE ST19171W  
Serial No. : LA136291  
SCSI Rev : 02036509  
SV ROM Rev : 81718171  
\*SV RAM Rev : 8150815

↓ DIAL (↻)

DISK MAINTENANCE MODE  
D1:DEVICE INFO

\*[ID-01]  
Product Name:  
SEAGATE ST19171W  
Serial No. : LA046473  
SCSI Rev : 02036509  
SV ROM Rev : 81718171  
SV RAM Rev : 8150815

↓ DIAL (↻)  
(omitted)  
↓ DIAL (↻)

DISK MAINTENANCE MODE  
D1:DEVICE INFO

[ID-01]  
Product Name:  
SEAGATE ST19171W  
Serial No. : LA046473  
SCSI Rev : 02036509  
SV ROM Rev : 81718171  
\*SV RAM Rev : 8150815

Time data display area

\_ID-00\_

PRODUCT NAME:

SEAGATE ST19171W

SERIAL LA136291

SCSI REV02036509

SV ROM 81718171

SV ROM 81718171

4-3-4. HDD Diagnosis Menu (D2)

The D2 : DIAGNOSIS menu is used to measure the operation performance of the connected all hard disk drives and to display the result. If the operation performance of a hard disk drive is insufficient for use in this unit, failure may occur during REC/PB operation that is performed via the hard disk drive.

The three measurement items below are available. If one of the measurement items fails, replace the hard disk drive corresponding to the ID number.

Measurement items

- OUTMOST RATE  
Indicates the transfer rate when the data in the outermost circumference of a hard disk is read.  
The measurement value fails for 0735 or less.
- INNERMOST RATE  
Indicates the transfer rate when the data in the innermost circumference of a hard disk is read.  
The measurement value fails for 0480 or less.
- SEEK TIME  
Indicates the head seek time between the outermost and innermost circumferences of a hard disk.  
The measurement value fails for 2400 or more.

Note

For the replacement of a hard disk drive incorporated into this unit, refer to Section 5 in the maintenance manual part 2, volume-1.

An HDD installation menu (D3 : INSTALLATION) is activated when the power is turned on after replacement. Perform the initialization for the replaced hard disk drive.



### To execute the measurement

- Turn the search dial in FORWARD (↻) direction while pressing the JOG button and change the display from “OFF” to “ON”.

#### Notes

- The display in a time data display area changes to “D2- PUSH SET BTN” when the JOG button is released after the display is changed to “ON”.
- Messages “Disk busy” (on the superimpose picture) and “DISK BUSY” (in the time data display area) are displayed when the hard disk drive is not completely activated immediately after the power is turned on. Turn the search dial while pressing the JOG button after the DISK BUSY indicator on the lower control panel goes off.

- Press the SET button.

- Measurement is then initiated.

#### Notes

- The measurement cannot be canceled after it is initiated.
  - The hard disk drive may malfunction when the power is turned off during measurement.
  - During measurement, message “Executing...” is displayed on the superimpose picture and message “EXECUTING” is displayed in the time data display area.
  - It takes about 30 seconds to measure a set of hard disk drives (two hard disk drives).
- Confirm that the measurement is completed.
    - Message “Complete” is displayed on the video monitor screen and the measurement result is displayed at that time.
    - In a time data display area, “\_ID-00\_” is displayed.

### Measurement result display

All measurement results in one ID number are superimposed on the video monitor.

The \* mark moves by one line when the search dial is turned.

To display the measurement results in other ID numbers, turn the search dial again.

In a time data display area, the contents of the \*-marked line are displayed on the superimpose picture.

Judge whether to replace the hard disk drive or not by the displayed measurement result.

### Menu termination

Press the MENU button to terminate this menu.

The measurement result is not stored.

### Example of display and operation

#### Superimpose picture

```
DISK MAINTENANCE MODE
D2:DIAGNOSIS

*OFF
```

↓ JOG + DIAL(↻)

```
DISK MAINTENANCE MODE
D2:DIAGNOSIS

*ON

Push SET button
```

↓ SET

```
DISK MAINTENANCE MODE
D2:DIAGNOSIS

*ON

Executing ...
```

↓

```
DISK MAINTENANCE MODE
D2:DIAGNOSIS

ON

Complete

*[ID-00]
OUTMOST RATE      0826
INNERMOST RATE    0623
SEEK TIME          1965
```

↓  
(omitted)  
↓

```
DISK MAINTENANCE MODE
D2:DIAGNOSIS

ON

Complete

[ ID-00]
OUTMOST RATE      0826
INNERMOST RATE    0623
*SEEK TIME          196
```

↓ DIAL(↻)

```
DISK MAINTENANCE MODE
D2:DIAGNOSIS

ON

Complete

*[ID-01]
OUTMOST RATE      0821
INNERMOST RATE    0628
SEEK TIME          1923
```

#### Time data display area

D2-DIAGNOSIS OFF

D2-DIAGNOSIS ON

D2-PUSH SET BTN

D2-EXECUTING

\_ID-00\_

OUTMOST 0826

INNERMOST 0623

SEEK TIME 1965

\_ID-01\_

### 4-3-5. HDD Installation Menu (D3)

The D3 : INSTALLATION menu is used to install the hard disk drive when replacing an internal hard disk drive.

Actually, a hard disk drive is initialized based on the logic format called a file system.

#### Note

All the user data items (video and audio) recorded in the incorporated and connected hard disk are erased when installation is carried out in this menu.

#### Note

In this unit, the error in error code D2 is displayed in the time data display area when it is detected to connect the hard disk drive in which the initialization is not performed. After that, the D3 : INSTALLATION menu is activated automatically.

Sub-error message “HDD Illegal Format(24)” is also superimposed on the video monitor.

#### Note

Write down the ID number and the serial number of the installed hard disk drive for future reference when replacing the hard disk drive. Install the hard disk drive after verifying the ID number and serial number on the video monitor screen or in time data display area.

#### To execute the installation

- (1) Turn the search dial and move the \* mark to the ID number of a hard disk drive in which installation is required. (In a time data display area, display the ID number.)

#### Notes

- When executing no installation, press the MENU button and exit this menu.
- The hard disk drive's serial number of an ID number is displayed on the right of the ID number.
- The ID number is not displayed when the hard disk drive is not completely activated immediately after the power is turned on. The ID number is displayed when the hard disk drive is activated.

- (2) Turn the search dial in FORWARD (↻) direction while pressing the JOG button and display “MARK”.

#### Note

Turn the search dial in REVERSE (↺) direction while pressing the JOG button and turn off the “MARK” display when the installation of the ID number is not executed.

- (3) If the hard disk drive that requires installation is two or more, repeat steps (1) and (2) and display “MARK” for all ID numbers.

#### Note

Display “MARK” for all ID numbers that require installation, and perform the installation only once.

- (4) Turn the search dial in FORWARD (↻) direction and move the \* mark to “INITIALIZE all the HDDs”. (In a time data display area, display “INITIALIZE”.)

- (5) Press the SET button.

- Installation is then initiated.

#### Notes

- The installation cannot be canceled after it is initiated.
- The hard disk drive may malfunction when the power is turned off during installation.
- During installation, message “Executing...” is displayed on the superimpose picture and message “EXECUTING” is displayed in the time data display area.



- (6) Confirm that the installation is completed.

- The “MARK” display changes to “DONE”.

This information is stored until the power is turned off.

#### Note

If the hard disk drive that requires installation does not partially display “MARK”, turn on the power again and install for only the specified hard disk drive again.

#### Menu termination

Press the MENU button to terminate this menu.

## Example of display and operation (D3)

Superimpose picture

```
DISK MAINTENANCE MODE
D3: INSTALLATION

* [ID-00] LA136291 ( )
  [ID-01] LA046473 ( )
  INITIALIZE all the HDDs
  marked above at a time.

-----
Confirm the serial No.!!
Select all HDDs replaced
while showing (MARK).
```

Time data display area

```
_ I D - 0 0 _  \ A 1 3 6 2 9 1
```

↓ [JOG] + DIAL(○)

```
DISK MAINTENANCE MODE
D3: INSTALLATION

* [ID-00] LA136291 (MARK)
  [ID-01] LA046473 ( )
  INITIALIZE all the HDDs
  marked above at a time.

-----
Confirm the serial No.!!
Select all HDDs replaced
while showing (MARK).
```

```
_ I D - 0 0 _  \ M A R K
```

```
_ I D - 0 1 _  \ A 0 4 6 4 7 3
```

(omitted)

↓

```
DISK MAINTENANCE MODE
D3: INSTALLATION

[ ID-00] LA136291 (MARK)
[ ID-01] LA046473 ( )
*INITIALIZE all the HDDs
marked above at a time.

-----
Confirm the serial No.!!
Select all HDDs replaced
while showing (MARK).
```

```
INITIALIZE
```

↓ [SET]

```
DISK MAINTENANCE MODE
D3: INSTALLATION

[ ID-00] LA136291 (MARK)
[ ID-01] LA046473 ( )
*Executing ...

-----
Confirm the serial No.!!
Select all HDDs replaced
while showing (MARK).
```

```
D 3 - E X E C U T I N G
```

↓

```
DISK MAINTENANCE MODE
D3: INSTALLATION

* [ID-00] LA136291 (DONE)
  [ID-01] LA046473 ( )

-----
All the marked HDDs have
been initialized.
```

```
_ I D - 0 0 _  \ D O N E
```

## 4-3-6. BLACK File Installation Menu (D4)

The D4 : BLACK INSTALLATION menu is used when a BLACK file is manually written in the zone of the hard disk that is set to the enable state by this unit.

(This menu is applied to the unit in which the SSX ROM version is 3.10 or later.)

### Note

In general, a BLACK file is automatically created when F5: DELETE ALL FILE is executed in a disk file management menu.

(For details of the disk file management menu, refer to Section 7-4 in the Operation Manual.)

The D4 : BLACK INSTALLATION menu may be selected after the maintenance mode is activated or may be automatically activated after the power is turned on.

In the following three cases, the D4: BLACK INSTALLATION menu is automatically activated after the power is turned on.

- When the connected BKNW-116 is first used after factory-shipping  
(The factory-shipped BKNW-116 has no BLACK file.)
- When the zone size of BKNW-116 is changed in the D5 : ZONE CONFIGURATION menu of the maintenance mode
- When the zone is changed from FULL to HALF-1 or HALF-2 in the emergency zone configuration menu displayed in case that system error D8 (sub-error code 84 : hardware error of hard disk) occurs  
(For details of the emergency zone configuration menu, refer to the Operation Manual.)

### BLACK file

The BLACK file is required when editing is performed using a nonlinear editing machine (DNE-50/700). The header based on this BLACK file is indispensable to reproduce the program created during editing. The BLACK file itself cannot be deleted.

**To execute the BLACK file installation**

- (1) Turn the search dial in FORWARD(↻) direction while pressing the JOG button and change the display from “OFF” to “ON”.

**Note**

When executing no installation, press the MENU button and exit this menu.

- (2) Press the SET button.
- BLACK file installation is then initiated.  
It takes about 2 minutes.
  - During installation, message “Formatting ...” is displayed on the superimpose picture and message “FORMATTING” is displayed in the time data display area.  
The progress state is also displayed in units of percent.

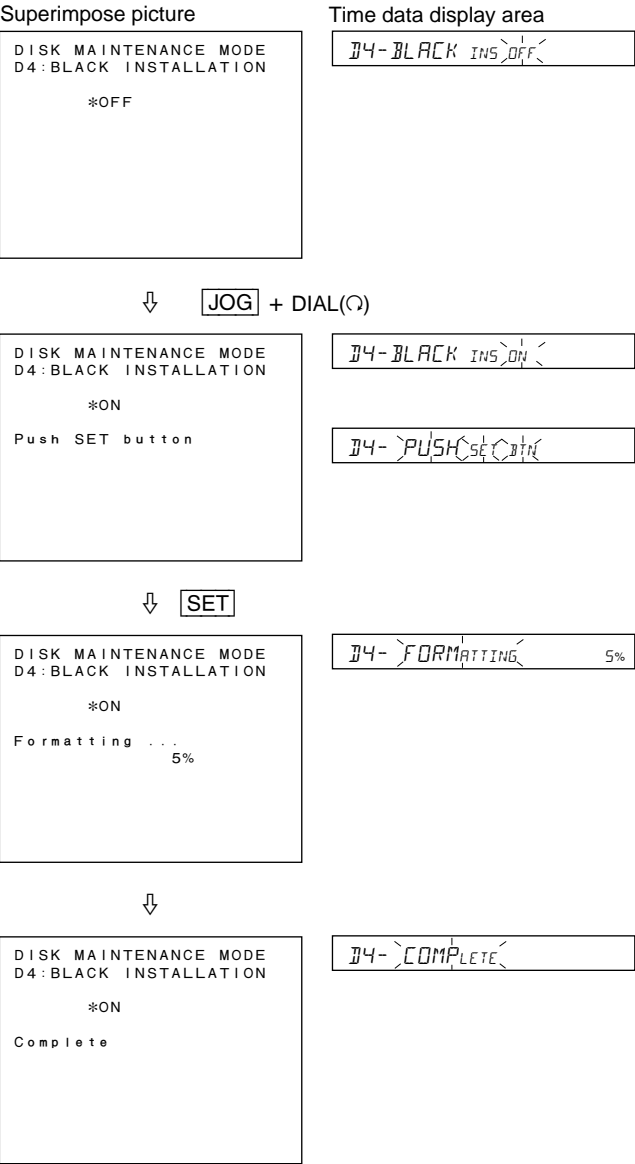
**Notes**

- This formatting cannot be canceled after it is initiated.
  - The hard disk drive may malfunction when the power is turned off during BLACK file installation.
- (3) Confirm that the formatting is completed.
- Message “Complete” is displayed on the superimpose picture. Message “D4- COMPLETE” is displayed in the time data display area.

**Menu termination**

Press the MENU button to terminate this menu.

**Example of display and operation**



## 4-3-7. Zone Configuration Menu (D5)

The D5 : ZONE CONFIGURATION menu sets the zone of the hard disk that this unit uses as a current zone. This menu is displayed only when disk unit BKNW-116 is connected to this unit.

The zone of the hard disk used in this unit can be selected from the eight zones below.

The zone is set to INTERNAL when BKNW-116 is first connected to this unit.

Zone	Hard disk used	Recording time
INTERNAL	HDDs built in this unit (ID0 and ID1)	1.5H
EXT FULL	All HDDs (ID2 to ID9) of BKNW-116	6.0H
EXT HALF-1	Four HDDs (ID2 to ID5) of BKNW-116	3.0H
EXT HALF-2	Four HDDs (ID6 to ID9) of BKNW-116	3.0H
EXT QTR -1	Two HDDs (ID2 and ID3) of BKNW-116	1.5H
EXT QTR -2	Two HDDs (ID4 and ID5) of BKNW-116	1.5H
EXT QTR -3	Two HDDs (ID6 and ID7) of BKNW-116	1.5H
EXT QTR -4	Two HDDs (ID8 and ID9) of BKNW-116	1.5H

The zone set state of this unit is displayed in the zone indicator at the right corner of a time data display area as described below.

Set zone	Lighting state of zone indicator
INTERNAL	No display
EXT FULL	<span>1</span> <span>2</span> <span>3</span> <span>4</span>
EXT HALF-1	<span>1</span> <span>2</span>
EXT HALF-2	<span>3</span> <span>4</span>
EXT QTR -1	<span>1</span>
EXT QTR -2	<span>2</span>
EXT QTR -3	<span>3</span>
EXT QTR -4	<span>4</span>

## Description of superimpose picture

DISK MAINTENANCE MODE D5: ZONE CONFIGURATION  *#INTERNAL (1.5H) EXT FULL (6.0H) EXT HALF-1 (3.0H) EXT HALF-2 (3.0H) EXT QTR -1 (1.5H) EXT QTR -2 (1.5H) EXT QTR -3 (1.5H) EXT QTR -4 (1.5H) <<current: INTERNAL >>	DISK MAINTENANCE MODE D5: ZONE CONFIGURATION  INTERNAL (1.5H) *#EXT FULL (6.0H) EXT HALF-1 (3.0H) EXT HALF-2 (3.0H) EXT QTR -1 (1.5H) EXT QTR -2 (1.5H) EXT QTR -3 (1.5H) EXT QTR -4 (1.5H) <<current: EXT FULL >>
---	---

Current zone: INTERNAL

Current zone: EXT FULL

DISK MAINTENANCE MODE D5: ZONE CONFIGURATION  INTERNAL (1.5H) EXT FULL (6.0H) *#EXT HALF-1 (3.0H) #EXT HALF-2 (3.0H) EXT QTR -1 (1.5H) EXT QTR -2 (1.5H) EXT QTR -3 (1.5H) EXT QTR -4 (1.5H) <<current: EXT HALF-1 >>	DISK MAINTENANCE MODE D5: ZONE CONFIGURATION  INTERNAL (1.5H) EXT FULL (6.0H) EXT HALF-1 (3.0H) EXT HALF-2 (3.0H) *#EXT QTR -1 (1.5H) #EXT QTR -2 (1.5H) #EXT QTR -3 (1.5H) #EXT QTR -4 (1.5H) <<current: EXT QTR-1 >>
--	---

Current zone: EXT HALF-1

Current zone: EXT QTR-1

The zone that is presently set is displayed in the lowest line as a current zone. The zone to be set is selected using an \* mark. A # mark indicates the zone size of BKNW-116.

### Note

When the current zone is set to INTERNAL, the # mark is also displayed in the INTERNAL position. The zone size of BKNW-116 is unknown at that time.

## Caution during change in zone

In BKNW-116, all hard disk drives are initialized in the FULL, HALF, or QTR state.

Even if the zone is changed from QTR-1 to HALF-1, the areas (ID6 to ID9) not used in HALF-1 are initialized as HALF-2. All user data items recorded in BKNW-116 are erased in this case.

### Notes

- When user data is lost, "All the user data in the disk will be lost." is displayed as a caution message during change in setting.
- The zone size of BKNW-116 at the factory is set to FULL.

### Change from INTERNAL to EXT

A # mark is also displayed when the current zone is set to INTERNAL. Therefore, the zone size of BKNW-116 becomes unknown.

However, if the desired zone size does not coincide with the current zone size of BKNW-116 in changing from INTERNAL to EXT, “!!!ZONE MISMATCH!!!” is displayed for re-selection. The current zone size of BKNW-116 is displayed using a # mark in re-selecting. No user data is erased if the # marked-zone is selected. The desired zone size is set as it is when it coincides with the current zone size of BKNW-116.

### Change from EXT to EXT

All user data items recorded in BKNW-116 are erased when the change below is made.

FULL ⇒ HALF    HALF ⇒ QTR    QTR ⇒ HALF  
FULL ⇒ QTR    HALF ⇒ FULL    QTR ⇒ FULL

For changes other than described above, no user data is erased.

For example, the contents of QTR-1 are stored even if the zone is changed from QTR-1 to QTR-4. The zone can be returned to QTR-1 later so as to reproduce or add and record the contents.

### Change from EXT to INTERNAL

The user data recorded in BKNW-116 is not erased even if the zone is changed from EXT to INTERNAL.

### To change the zone

- (1) Turn the search dial and move the \* mark to the desired zone. (In a time data display area, display the zone name.)
  - An \* mark is assigned to the current zone name when a menu is opened.
  - In a time data display area, the contents of which the \*-marked line displayed on the superimpose picture is displayed.
  - When terminating this menu, press the MENU button.
- (2) Press the SET button.
  - When terminating this menu, press the MENU button.
  - When user data is lost, “All the user data in the disk will be lost.” is displayed as a caution message during change in setting.

- (3) Turn the search dial in FORWARD(↻) direction while pressing the JOG button and change the display from “OFF” to “ON”.

#### Note

The display in a time data display area changes to “D5-PUSH SET BTN” when the JOG button is released after the display is changed to “ON”. After that, “D5- ZONE ON” is displayed when the JOG button pressed again.

#### CAUTION

- The change in a zone cannot be interrupted after step (4). To stop the change, press the MENU button without step (4). The current screen then returns to the zone selection screen. However, “!!!ZONE MISMATCH!!!” is displayed immediately after the SET button is pressed in step (4) when the desired zone size differs from the current zone size of BKNW-116. The current screen then returns to the zone selection display in step (1).
- All user data items recorded in BKNW-116 are erased when the zone size of BKNW-116 is changed in the EXT state.

- (4) Press the SET button.

- The change in a zone starts if no ZONE MISMATCH message is displayed.
- During change, message “Initializing ...” is displayed on the superimpose picture and message “INITIALIZING” is displayed in the time data display area.

#### Note

The hard disk drive may be damaged when the power is turned off during change in a zone.

- (5) Confirm that the change in a zone is completed.
  - “Turn off/on POWER!!” is displayed on the superimpose screen. “TURN OFF POWER” is displayed in the time data display area.
  - The lighting state of a zone indicator at the right corner of the time data display area changes corresponding to the set zone. (Refer to the preceding page.)
- (6) Turn the power off once in the order of this unit and BKNW-116. Then turn on the power on again in the order of BKNW-116 and this unit.

#### Note

Pay attention to the order when turning on the power. Turn on the power properly in the order of BKNW-116 and this unit. If not, BKNW-116 cannot be used normally.

- (7) Only when zone size of BKNW-116 is changed The D4: BLACK INSTALLATION menu is activated automatically. Therefore, a BLACK file is created in this menu. (Refer to Section 4-3-6.)

### Example 1 of display and operation

During change from EXT FULL to EXT HALF-1

Superimpose picture

```

DISK MAINTENANCE MODE
D5: ZONE CONFIGURATION

INTERNAL          (1.5H)
*#EXT FULL        (6.0H)
EXT HALF-1        (3.0H)
EXT HALF-2        (3.0H)
EXT QTR -1        (1.5H)
EXT QTR -2        (1.5H)
EXT QTR -3        (1.5H)
EXT QTR -4        (1.5H)
<<current: INTERNAL >>

```

Time data display area

EXT FULL 0234

↓ DIAL(○)

```

DISK MAINTENANCE MODE
D5: ZONE CONFIGURATION

#INTERNAL          (1.5H)
* EXT FULL        (6.0H)
EXT HALF-1        (3.0H)
EXT HALF-2        (3.0H)
EXT QTR -1        (1.5H)
EXT QTR -2        (1.5H)
EXT QTR -3        (1.5H)
EXT QTR -4        (1.5H)
<<current: INTERNAL >>

```

EXT HALF-1 0234

↓ SET

```

DISK MAINTENANCE MODE
D5: ZONE CONFIGURATION

EXT HALF-1 (3.0H)

*OFF

----- Caution -----
All the user data in
the disk will be lost.
After executing this.
DO NOT TURN POWER OFF!

```

D5- ZONE OFF 0234

↓ JOG + DIAL(○)

```

DISK MAINTENANCE MODE
D5: ZONE CONFIGURATION

EXT HALF-1 (3.0H)

*ON
Push SET button
----- Caution -----
All the user data in
the disk will be lost.
After executing this.
DO NOT TURN POWER OFF!

```

D5- ZONE ON 0234

D5- PUSH SET 0234

↓ SET

```

DISK MAINTENANCE MODE
D5: ZONE CONFIGURATION

EXT HALF-1 (3.0H)

*ON
Initializing ...
----- Caution -----
All the user data in
the disk will be lost.
DO NOT TURN POWER OFF!

```

D5- INITIALIZING 0234

↓

```

DISK MAINTENANCE MODE
D5: ZONE CONFIGURATION

EXT HALF-1 (3.0H)

*ON
TURN off/on POWER !!

```

D5- TURN OFF/ON 02

### Example 2 of display and operation

During ZONE MISMATCH display  
(change from INTERNAL to EXT HALF-1)

Superimpose picture

```

DISK MAINTENANCE MODE
D5: ZONE CONFIGURATION

*#INTERNAL          (1.5H)
EXT FULL          (6.0H)
EXT HALF-1        (3.0H)
EXT HALF-2        (3.0H)
EXT QTR -1        (1.5H)
EXT QTR -2        (1.5H)
EXT QTR -3        (1.5H)
EXT QTR -4        (1.5H)
<<current: INTERNAL >>

```

Time data display area

INTERNAL

↓ DIAL(○)

```

DISK MAINTENANCE MODE
D5: ZONE CONFIGURATION

*#INTERNAL          (1.5H)
EXT FULL          (6.0H)
EXT HALF-1        (3.0H)
EXT HALF-2        (3.0H)
EXT QTR -1        (1.5H)
EXT QTR -2        (1.5H)
EXT QTR -3        (1.5H)
EXT QTR -4        (1.5H)
<<current: INTERNAL >>

```

EXT FULL

EXT HALF-1

↓ SET

```

DISK MAINTENANCE MODE
D5: ZONE CONFIGURATION

EXT HALF-1 (3.0H)

*OFF

----- Caution -----
All the user data in
the disk will be lost.
After executing this.
DO NOT TURN POWER OFF!

```

D5- ZONE OFF

↓ JOG + DIAL(○)

```

DISK MAINTENANCE MODE
D5: ZONE CONFIGURATION

EXT HALF-1 (3.0H)

*ON
Push SET button
----- Caution -----
All the user data in
the disk will be lost.
After executing this.
DO NOT TURN POWER OFF!

```

D5- ZONE ON

D5- PUSH SET

↓ SET

```

DISK MAINTENANCE MODE
D5: ZONE CONFIGURATION
!!! ZONE MISMATCH !!!
* INTERNAL          (1.5H)
*#EXT FULL          (6.0H)
EXT HALF-1        (3.0H)
EXT HALF-2        (3.0H)
EXT QTR -1        (1.5H)
EXT QTR -2        (1.5H)
EXT QTR -3        (1.5H)
EXT QTR -4        (1.5H)
<<current: INTERNAL >>

```

INTERNAL

#### Note

Example 1: This is an example given when the zone is changed from EXT FULL to EXT HALF-1.

Example 2: This is an example given when the zone is changed from INTERNAL to EXT HALF-1. "!!!ZONE MISMATCH!!!" is displayed because the zone size of BKNW-116 is EXT FULL.

### 4-3-8. Disk Cleaning Menu (D9)

The D9 : DISK CLEANING menu is used to replace the defective sector with a media error with a substitutive sector.

The hard disk drives equipped with this unit can be disk-cleaned at a time. The momentary freeze of picture or intermittent of sound on the specific portion can be solved by disk cleaning.

#### Notes

- All the user data items (video and audio) recorded in the equipped hard disk are erased when the disk cleaning is performed in this menu.
- If the value of a medium(total)/MEDIUM(T) counter reads ten or more, replace the corresponding hard disk drive.
- All medium/MEDIUM error counters are reset to “0” when the disk cleaning is performed in this menu.

#### Selecting the cleaning menu

Turn the search dial in FORWARD (↻) direction while pressing the PLAY button. Message “D9-DISK CLEANING” is then displayed in the time data display area. On the video monitor screen, the \* mark moves to the left of a “D9 : DISK CLEANING” menu. Press the SET button.

#### Note

This menu is not displayed in the time data display area even if the search dial is turned during menu selection in the DISK maintenance mode. Moreover, the \* mark cannot be moved to the “D9 : DISK CLEANING” menu on the video monitor screen.

#### To execute the cleaning

- (1) Turn the search dial in FORWARD (↻) direction while pressing the JOG button and change the “OFF” display to “ON”.

#### Notes

- When executing no cleaning, press the MENU button to exit this menu.
- The display in a time data display area changes to “D9- PUSH SET BTN” when the JOG button is released after the display is changed to “ON”. After that, “D9-CLEANING ON” is displayed when the JOG button is pressed again.
- Messages “Disk busy” (on the superimpose picture) and “DISK BUSY” (in the time data display area) are displayed when the hard disk drive is not completely activated immediately after the power is turned on. Turn the search dial while pressing the JOG button after the DISK BUSY indicator on the lower control panel goes off.

- (2) Press the SET button.

- Disk cleaning is then initiated.

#### Notes

- The cleaning cannot be canceled after it is initiated.
- The hard disk drive may malfunction when the power is turned off during cleaning.
- It takes several seconds to some ten seconds to perform the disk cleaning.
- During cleaning, message “Executing...” is displayed on the superimpose picture and message “EXECUTING” is displayed in the time data display area.

- (3) Confirm that the cleaning is completed.

- Message “Complete” is displayed on the superimpose picture. Message “D9- COMPLETE” is displayed in the time data display area.

#### Menu termination

Press the MENU button to terminate this menu.



## Example of display and operation

### Superimpose picture

```

DISK MAINTENANCE MODE
D9:DISK CLEANING

*OFF

----- Caution -----
All the user data in
the disk will be lost.
After executing this.
DO NOT TURN POWER OFF!

```

### Time data display area

```

D9-CLEANING OFF

```

↓ **JO**G + DIAL(↻)

```

DISK MAINTENANCE MODE
D9:DISK CLEANING

*ON

Push SET button

----- Caution -----
All the user data in
the disk will be lost.
After executing this.
DO NOT TURN POWER OFF!

```

```

D9-CLEANING ON

```

```

D9-PUSH SET BTN

```

↓ **SE**T

```

DISK MAINTENANCE MODE
D9:DISK CLEANING

*ON

Executing ...

----- Caution -----
All the user data in
the disk will be lost.
DO NOT TURN POWER OFF!

```

```

D9-EXECUTING

```

↓

```

DISK MAINTENANCE MODE
D9:DISK CLEANING

*ON

Complete

----- Caution -----
User data is no longer
existing in the disk.

```

```

D9-COMPLETE

```

## 4-4. Error Logger Display Mode (M2)

### 4-4-1. Outline

This unit has an error log function that records the error generated or detected in this unit.

The error logger display mode is used to superimpose the contents (data) of the error log on the video monitor. The ordinary display mode (refer to Section 4-4-2) and the setting mode (refer to Section 4-4-3) that displays the menu to limit the error log display are available in this unit.

The calendar/clock date incorporated into this unit can be set in the setting mode.

---

#### Activation and Termination

The two methods below are used to activate the error logger display mode. To terminate the error logger display mode, press the MENU button in the display mode. It returns to the operation state before activation when the error logger display mode is terminated.

- A. Select an M2 : ERROR LOGGER menu in the maintenance mode.
- B. Press the MENU button while pressing the ENTRY button on the lower control panel during ordinary operation.

---

#### Error Log

The recorded error log is classified into four categories: TAPE ERROR, DISK ERROR, WARNING, and CONDITION. (The error log belongs to the four types.)

Each log is constituted by a message, error generation date, and time code.

The message varies depending on the type of a log.

The error generation date is the date based on the calendar and clock of this unit. (The year is omitted.)

The time code records the time code (LTC) data of the VTR or disk side which is stored in this unit at the error occurs. When the DISK ERROR occurs, it records the time code on the disk side. When other errors are occurred, recorded the time code of the VTR side.

The maximum number of stored log is 300. If the number of log exceeds 300, the contents of oldest error log is erased sequentially.

#### TAPE ERROR

An error code and error message are recorded as a message when the error (error codes 01 to 99) related to a VTR and system occurs.

When multiple sub-error messages are displayed, the three sub-error messages from the top are recorded.

For the error message, refer to Section 3.

#### DISK ERROR

An error code and an error message are recorded as a log when the error (error codes D1 to D8) related to a hard disk drive occurs.

When multiple sub-error messages are displayed, the three sub-error messages from the top are recorded.

The sub-error message that is not displayed as an error message are also recorded in an error log.

For the error message, refer to Section 3.

#### WARNING

The warning log below is recorded in an error log.

- REFERENCE MISSING

This message is recorded when no signal is input to the REF VIDEO (reference video signal) connector after the power is turned on.

#### CONDITION

The condition logs below are recorded in an error log.

- VIDEO PB CONDITION RED

This message is recorded when the channel condition becomes red during video PB operation.

- AUDIO PB CONDITION RED

This message is recorded when the channel condition becomes red during audio PB operation.

## 4-4-2. Display Mode

The operation in the ordinary display mode is described based on a display example on the superimpose picture. The log number/total log count is displayed in the second line. “(001/000)” is displayed when no log exists. The third to tenth lines (eight lines) are the area where logs are displayed. The three-digit number on the left indicates the log number. The contents of a log are displayed on its right.

A calendar/clock is displayed on the lowest line.

### Notes

- The top screen on the right is the example displayed when the error logger mode is first activated after the power is turned on. The second-time or later screen is displayed with the preceding display completed.
- In a time data display area, only the log number/total log count (e.g., “ERR LOG 001/003”) is displayed.

## Search dial (JOG mode)

To display the log number not displayed on the screen, turn the search dial and move the \* mark.

## CTL/TC/UB button

On this screen, the whole message is displayed partially. To display other information (date and time code), press the CTL/TC/UB button.

## F FWD button

The whole contents of a log to which the \* mark was set are displayed while the F FWD button is pressed.

The category (error code for TAPE ERROR and DISK ERROR) of an error log is displayed in the third line.

Messages are displayed in the fourth and fifth lines, and sub-error messages in the sixth to eighth lines. The date (not including the year) is displayed in the ninth line, and time code in the tenth line.

Other logs can be displayed in this display state when the search dial is turned with the F FWD button pressed.

## RESET button

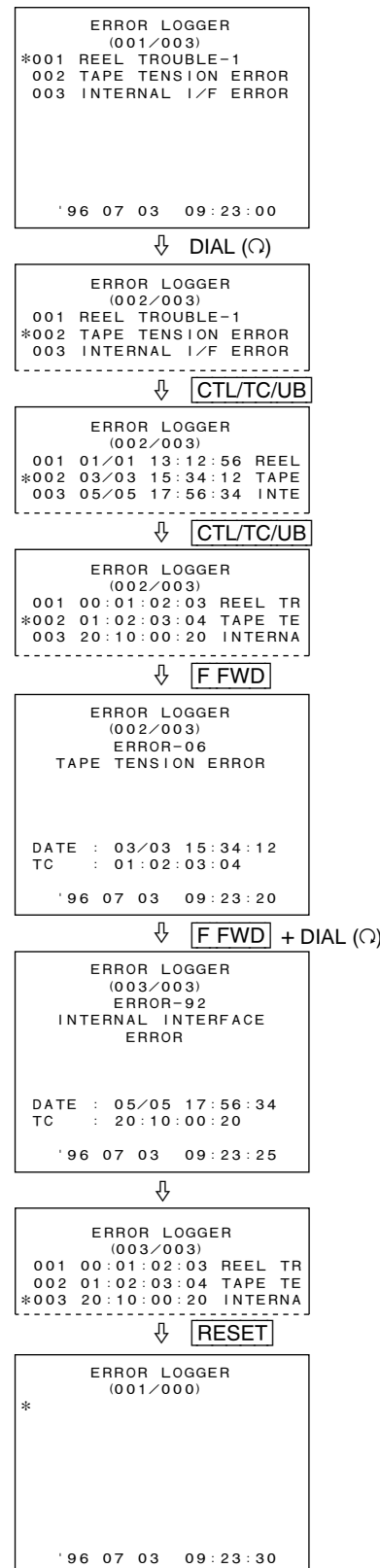
The recorded all logs are erased when the RESET button is pressed.

### Note

Usually, do not erase any log.

There may be some error logs that are useful for confirmation of the progress when a trouble occurs or that are important in preventing a trouble from occurrence.

## Example of display and operation



**SET button**

A white square mark is displayed in the upper-right position of the superimpose picture when the SET button is pressed. The unit then enters the normal operation state (in which the normal operation of this unit except a menu system can be performed). However, the character information (time code or operation status) superimposed during normal operation is not displayed in this case. To return to the former state, press the MENU button.

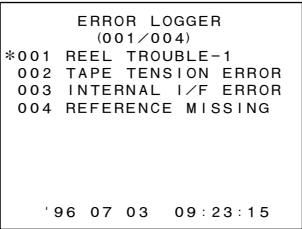
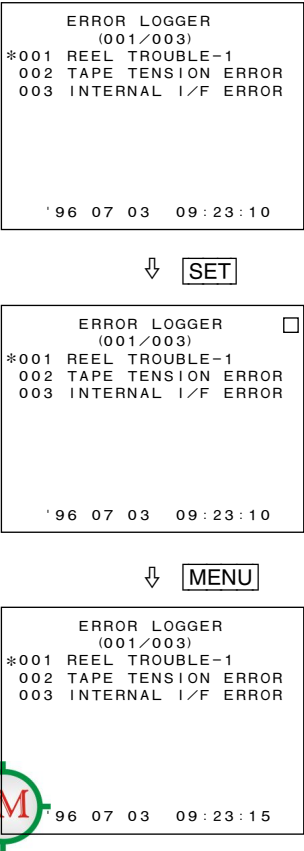
**MENU button**

The display returns to the error logger display mode when the MENU button is pressed with the white square displayed in the upper-right position of the superimpose picture. Pressing the MENU button in the error logger display mode terminates the error logger display mode.

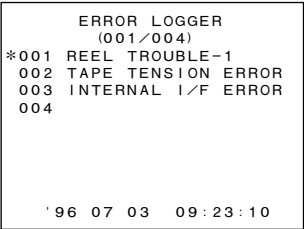
**Limited-display screen**

For the error log of a category that is set to OFF in the menu of setting mode (refer to Section 4-4-3), information items other than a log number are not displayed. However, the whole display using the F FWD button is not influenced by the setting.

**Example of display and operation**



**Ordinary Screen  
(No limited-display)**



**Only Warning Turned Off**

### 4-4-3. Setting Mode

The setting mode is used to display a menu that limits the display of an error log. In this menu, the display can be turned on and off for each error log category. A calendar/clock can also be set in this menu.

#### Notes

- The top and second screens on the right are the examples displayed when the error logger mode and setting mode are first activated after the power is turned on. The second-time or later screen is displayed with the preceding display completed.
- A white square mark is displayed in the upper-right position of the superimpose picture as in the display mode when the SET button is pressed in the setting mode (except when “Push SET Button” is displayed during calendar/clock setting). The unit then enters the normal operation state (in which the normal operation of this unit except a menu system can be performed). The former state is returned when the MENU button is pressed.

#### Entering the setting mode

Press the SET button while pressing the STOP button in the display mode.

#### Returning to the display mode

Press the SET button again while pressing the STOP button or press the MENU button.

#### Setting menu

The seventh to tenth lines on the superimpose picture are a setting menu. The display in the display mode is left in the first to fifth lines.

Each setting when the power is turned on is all ON.

The error log belonging to a category is limited in display when each item is set to OFF. (Refer to the “Limited-display screen” on the previous page.)

The changed setting is valid until the power is turned off.

How to change the setting is described below.

- (1) Turn the search dial and move the \* mark to the category to be changed in setting.

#### Notes

- In a time data display area, the contents of the \*-marked line are displayed on the superimpose picture.
- Turn the search dial continuously in FORWARD (↻) direction for the calendar/clock setting. (Refer to the next page.)

- (2) To change the setting from ON to OFF, turn the search dial in REVERSE (↺) direction while pressing the JOG button.

To change it from OFF to ON, turn the search dial in FORWARD (↻) direction while pressing the JOG button.

- (3) To change the setting of other categories, repeat steps (1) and (2).
- (4) Press the MENU button to terminate the setting mode.

### Example of display and operation

#### Display mode

```

ERROR LOGGER
(001/003)
*001 REEL TROUBLE-1
002 TAPE TENSION ERROR
003 INTERNAL I/F ERROR

'96 07 03 09:23:15
  
```

Setting mode ↓ [STOP] + [SET]

```

ERROR LOGGER
(001/003)
001 REEL TROUBLE-1
002 TAPE TENSION ERROR
003 INTERNAL I/F ERROR
-----
*TAPE ERROR          ON
DISK ERROR           ON
WARNING              ON
CONDITION            ON

'96 07 03 09:23:17
  
```

↓ DIAL(↻)

```

ERROR LOGGER
(001/003)
001 REEL TROUBLE-1
002 TAPE TENSION ERROR
003 INTERNAL I/F ERROR
-----
TAPE ERROR           ON
*DISK ERROR          ON
WARNING              ON
CONDITION            ON

'96 07 03 09:23:20
  
```

↓ [JOG] + DIAL(↻)

```

ERROR LOGGER
(001/003)
001 REEL TROUBLE-1
002 TAPE TENSION ERROR
003 INTERNAL I/F ERROR
-----
TAPE ERROR           ON
*DISK ERROR          OFF
WARNING              ON
CONDITION            ON

'96 07 03 09:23:22
  
```

↓ [JOG] + DIAL(↻)

```

ERROR LOGGER
(001/003)
001 REEL TROUBLE-1
002 TAPE TENSION ERROR
003 INTERNAL I/F ERROR
-----
TAPE ERROR           ON
*DISK ERROR          ON
WARNING              ON
CONDITION            ON

'96 07 03 09:23:24
  
```

## Calendar/clock setting

The calendar/clock's date and time of this unit can be adjusted in the setting mode as described below.

In a display/operation example on the right, 9:23 of July 3rd in 1996 is set to 15:00 of August 1st in 1996.

- (1) Turn the search dial slowly and turn on and off the numerical value (year, month, day, hour, minute, or second) of the calendar/clock item to be changed.

### Notes

- When an \* mark is displayed in the setting menu, turn the search dial continuously in FORWARD (○) direction until the numerical value blinks. For the calendar/clock setting, an \* mark is not displayed on the superimpose picture.
  - Do not turn the search dial excessively in REVERSE (○) direction during setting. An \* mark is displayed in the setting menu and the calendar/clock setting is stopped.
- (2) Turn the search dial while pressing the JOG button and change the numerical value to the desired one.

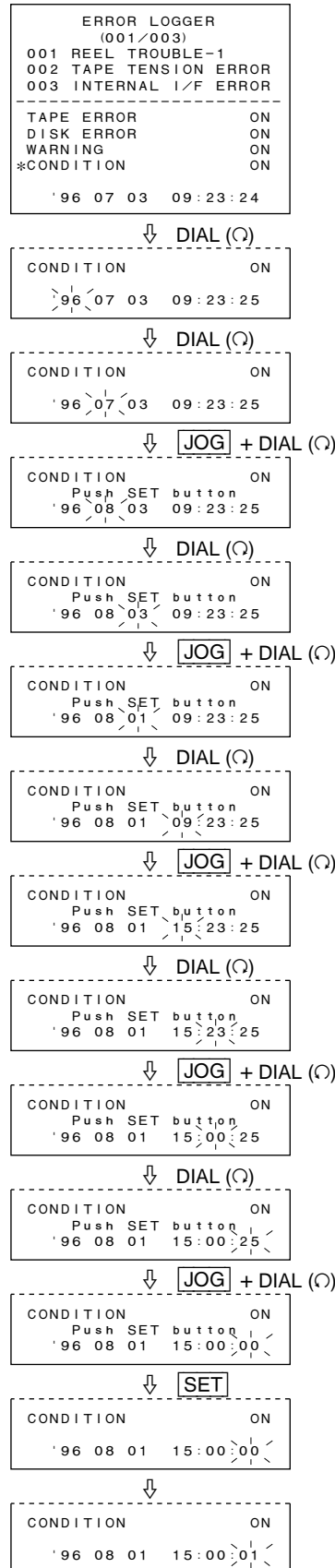
### Notes

- The count display of seconds stops when the numerical value is changed. The internal data is updated.
  - On the superimpose picture, message "Push SET Button" is displayed in the upper line.
- (3) Repeat steps (1) and (2) until the numerical values in other items are changed completely.
  - (4) Press the SET button to save the setting values.

### Notes

- To change only the date, the time must also be set again.
  - To cancel the calendar/clock setting, terminate the setting mode or turn the search dial in REVERSE (○) direction until an \* mark is displayed in the setting menu (the setting menu item is displayed for a time data display area).
  - The unit enters the normal operation state when the SET button is pushed with message "Push SET Button" not displayed on the superimpose picture. Press the MENU button to return to the former state.
  - To set the time accurately, press the SET button immediately the display and current time coincided.
- (5) Press the MENU button to terminate the setting mode.

## Example of display and operation



## Section 5

### Periodic Maintenance and Inspection

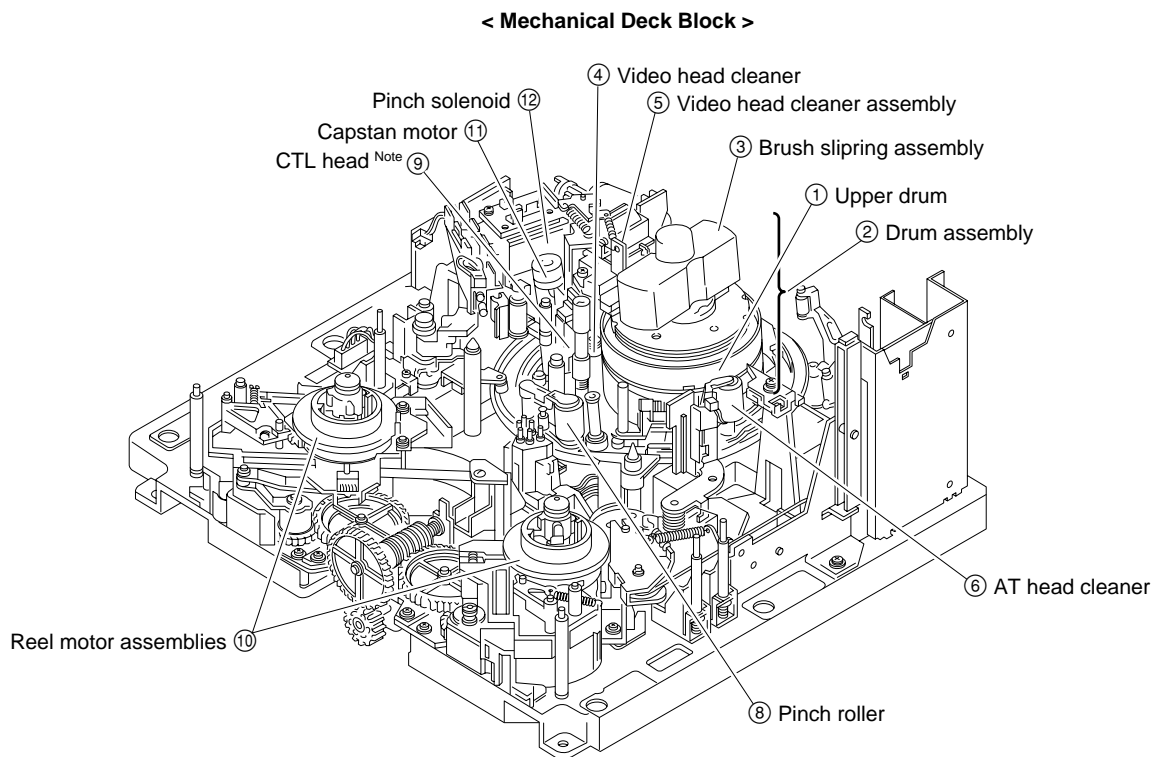
This section explains about periodic maintenance and how to clean.

#### 5-1. Periodic Maintenance

To make the most of the functions, fully realize the performances of this unit and to lengthen the life of the unit, periodic check and parts replacement are recommended.

##### 5-1-1. Index

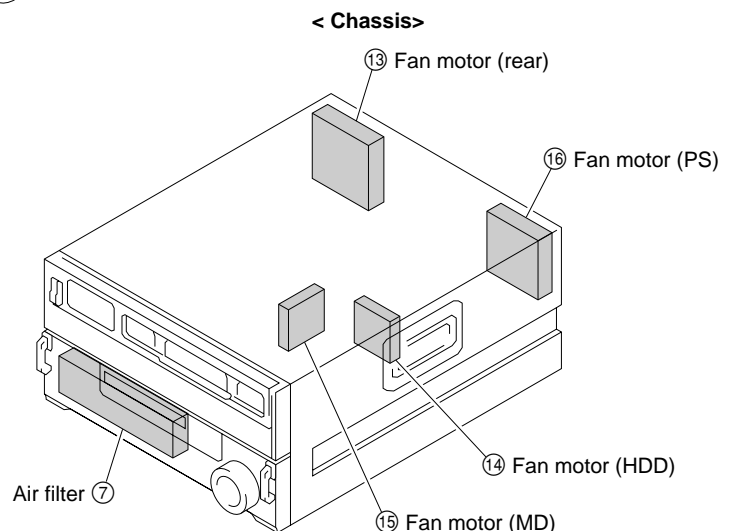
It is necessary to check and replace periodically to the following parts.  
The numbers in the illustration correspond to the table in the next page.



Note:

The CTL head in the VTR was changed into the improved type from the following serial numbers. This improved CTL head is not needed to perform the periodic replacement.

DNW-A100 (UC) :	S/N 10321 and Higher
DNW-A100P (CE) :	S/N 10265 and Higher
DNW-A100P (UC) :	S/N 10002 and Higher
DNW-A50 (UC) :	S/N 10236 and Higher
DNW-A50P (CE) :	S/N 10096 and Higher
DNW-A50P (UC) :	S/N 10001 and Higher
DNW-A45 (UC) :	S/N 10131 and Higher
DNW-A45P (CE) :	S/N 10061 and Higher
DNW-A45P (UC) :	S/N 10001 and Higher



## 5-1-2. Periodic Replacement and Check Item Table

The replacement time shown in the following table is not the guarantee term of parts. The replacement time of parts varies depending on the operating environment and conditions of the unit.

Especially, the pinch roller, cleaners and air filter may be required replacing earlier than replacement period shown in table depending on the degree of their dirt or abrasion.

The arrows “↓” and “↑” in the table indicate that the part is included in the assembly described on the upper / lower line. If the assembly on the pointed line is replaced, the part is also replaced as a component of the assembly together.

For the hours meter, refer to Section 5-1-3.

For replacing each part, refer to the maintenance manual part 2, volume-1.

R : Replace the part

C : Perform check (adjustment)

Replace it depending on its condition

No.	Replacement parts	Hours meter (Menu No.)	Inspection hours (h)						
			1000	2000	3000	4000	5000	6000	
1	Upper drum	Drum rotating time (H02)		C *1	C *1	C *1	C *1	C *1 (↓)	
2	Drum assembly *2	Drum rotating time (H02)						C *3	
3	Brush slip ring assembly	Drum rotating time (H02)						R (↑)	
4	Video head cleaner	Drum rotating time (H02)	C *4	R	C *4	R	C *4	↓	
5	Video head cleaner assembly *5 *6	Drum rotating time (H02)						R	
		Threading times (H04)	Replace when used 200,000 times						
6	AT head cleaner	Drum rotating time (H02)	C *4	R	C *4	R	C *4	R	
7	Air filter	Air filter use time (H15)						R	
8	Pinch roller	Tape running time (H03)	C *4	R	C *4	R	C *4	R	
9	CTL head *7	Tape running time (H03)				R *7			
10	Reel motor	Tape running time (H03)				R			
11	Capstan motor	Tape running time (H03)						R	
12	Pinch solenoid *6	Tape running time (H03)						R	
		Threading times (H04)	Replace when used 200,000 times						
13	Fan motor (rear)	Energized time (H01)	Replace when used 40,000 hours						
14	Fan motor (HDD)	Energized time (H01)	Replace when used 40,000 hours						
15	Fan motor (MD)	Energized time (H01)	Replace when used 40,000 hours						
16	Fan motor (PS)	Energized time (H01)	Replace when used 40,000 hours						

\*1 Measure and check the tip protrusions of the video heads referring to Section 5-3.

\*2 Drum assembly includes an upper drum and a brush slip ring assembly.

\*3 Check (adjust) the video tracking referring to Section 7-1-3 of the maintenance manual part 2, volume-1.

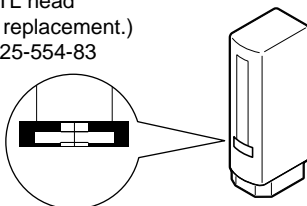
\*4 Check that the shape is not deformed and that is not dirty by visual.

\*5 Video head cleaner assembly includes a video head cleaner.

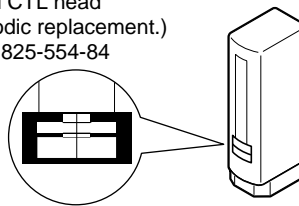
\*6 Replace these parts when the replacement period or count is reached whichever is earlier.

\*7 For the CTL head of former type only needs the periodic replacement. When replacing, be sure to use the improved CTL head. For the improved CTL head do not need it. Can be discern former type or improved type by looking at the head surface.

Former CTL head  
(Needs periodic replacement.)  
Part No. 8-825-554-83



Improved CTL head  
(Needs not periodic replacement.)  
Part No. 8-825-554-84





Part No.	Name	Q'ty	Note
A-8277-421-A	Upper drum DJR-13A-R	1	DNW-A100/A100P
A-8277-915-A	Upper drum DJR-16A-R	1	DNW-A50/A45/A50P/A45P
A-8277-425-A	Drum DJH-13A-R	1	DNW-A100/A100P
A-8277-914-A	Drum DJH-16A-R	1	DNW-A50/A45/A50P/A45P
A-8277-462-A	Ring 3 assy (RP), brush slip	1	
X-3167-281-3	Roller assy, V cleaning	1	
3-182-765-02	Spacer, CR	1	
A-8267-398-J	Cleaner assy, video head	1	
X-3167-053-2	Arm assy, CL	1	
3-603-810-01	Filter	1	
X-3167-054-4	Arm assy, pinch	1	
8-825-554-84	CTL head (PS244-21B)	1	
A-8267-774-E	RM assy	2	
1-698-179-12	Motor, DC (capstan)	1	
1-454-338-00	Solenoid, plunger	1	
1-698-939-11	Fan, DC (92 square)	1	
1-698-786-11	Fan, DC (60 square)	1	
1-698-857-11	Fan, DC (60 square)	1	
1-698-812-11	Fan, DC (80 square)	1	

**Note**

Installing information of Former CTL head (at ex-factory)

DNW-A100 (UC): 10001 to 10320  
 DNW-A100P (CE): 10001 to 10264  
 DNW-A100P (UC): 10001  
 DNW-A50 (UC): 10001 to 10235  
 DNW-A50P (CE): 10001 to 10095  
 DNW-A50P (UC): none  
 DNW-A45 (UC): 10001 to 10130  
 DNW-A45P (CE): 10001 to 10060  
 DNW-A45P (UC): none

(As some units above serial numbers were applied the improved CTL head, discern by looking at its head surface.)

Replace the parts shown in the table below periodically when the threading/unthreading operation is repeated frequently.

Replacement parts	Replacement period	Part No.	Name	Q'ty
Brake solenoid	Every 200,000 times of threading	1-454-417-31	Solenoid, Plunger	1
S tension regulator	Every 200,000 times of threading	A-8267-795-E	Tension regulator assy (RP)	1
T tension regulator	Every 200,000 times of threading	A-8267-423-B	T-tension regulator assy	1
T drawing arm assembly	Every 200,000 times of threading	A-8278-313-A	Drawer assy (T)	1
Gear box assembly	Every 200,000 times of threading	A-8267-424-A	Box assy, Gear	1
Threading ring assembly	Every 200,000 times of threading	A-8267-395-F	Ring assy, Threading	1
Ring roller	Every 200,000 times of threading	3-180-677-01	Roller, Ring	2
		3-180-679-01	Roller (B), Ring	1
Pinch arm guard	Every 200,000 times of threading	3-180-853-01	Guard, Pinch arm	1
CL guide rail	Every 200,000 times of threading	3-180-874-02	Rail, CL guide	1
Cassette compartment assembly	Every 200,000 times of threading	A-8267-589-E	Cassette compartment (RP)	1
Video head cleaner	Every 1,000 hours of drum rotating	X-3167-281-3	Roller assy, V cleaning	1
		3-182-765-02	Spacer, CR	1
AT head cleaner	Every 1,000 hours of drum rotating	X-3167-053-2	Arm assy, CL	1
Pinch roller	Every 1,000 hours of drum rotating	X-3167-054-4	Arm assy, Pinch	1

### 5-1-3. Hours Meter

This unit can display an hours meter on the time data display area of the lower control panel. Perform a periodic check with this hours meter as a reference.

#### 1. Contents of display

Menu No.	Display	Contents
H01	OPERATION HOURS	Sum of energized time
H02	DRUM RUNNING HOURS	Sum of drum rotating time
H03	TAPE RUNNING HOURS	Sum of tape running time
H04	THREADING COUNTER	Sum of threading
H12	DRUM RUNNING HOURS	Sum of drum rotating time (Resettable)
H13	TAPE RUNNING HOURS	Sum of tape running time (Resettable)
H14	THREADING COUNTER	Sum of threading (Resettable)
H15	AIRFILTER OPERATION HOURS	Sum of air filter use time (Resettable)

#### 2. Display procedure

- (1) Press the MENU button on the lower control panel.
- (2) Put the “\*” to the desired ITEM by turning the search dial.
- (3) Press the SET button on the lower control panel to display the hours meter.
- (4) Press the MENU button once and repeat from step (2) to display other ITEM.  
Press the MENU button twice to exit the MENU.

## 5-2. Cleaning

To make the most of the functions, fully realize the performance of this unit, and to lengthen the life of the unit and tape, clean the components often.

### 5-2-1. Cleaning using Cleaning Tape

If the video heads are clogged, clean the video head as the following procedure. Make sure to use the specified cleaning tape. If other tape is used, unusual abrasion or damage of the video heads may occur.

Specified cleaning tape: BCT-5CLN

#### Procedure

1. Insert the cleaning tape BCT-5CLN to the unit.
2. Press the EJECT and PLAY buttons simultaneously.  
The cleaning tape is played back for approx. 5 seconds. After that, the cleaning tape will be ejected automatically.
3. Check to see that the head clogging is clear.

#### Notes

- If the cleaning tape is not ejected after playing back more than 5 seconds, be sure to press the EJECT button immediately to eject the cleaning tape.
- Do not place the cleaning tape in the STOP mode, and do not put the unit in fast-forward and rewind modes, because the video heads may be damaged.

If the video heads are still clogged after cleaning using a cleaning tape, clean them using a cleaning cloth. (Refer to Section 5-2-3.)

### 5-2-2. General Information for Cleaning using Cleaning Cloth

#### 1. Cautions

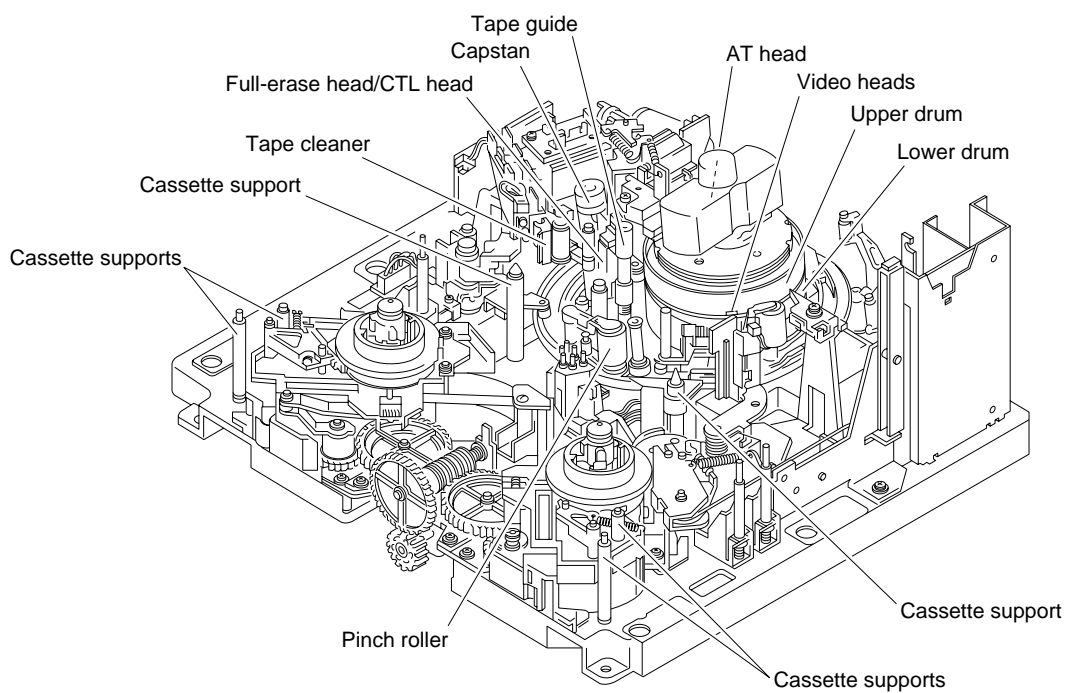
- Be sure to turn the power off before cleaning.
- Each block in the mechanical deck consists of a precision part and is adjusted precisely. Be careful not to damage each part and to apply an excessive force during cleaning.
- Do not contact the greased portions during cleaning. If the grease smears to a cleaning cloth, use a new cloth to avoid allow the grease to contact places where it should not.
- Do not insert a cassette tape before a cleaning fluid completely evaporates after cleaning.

#### 2. Preparation

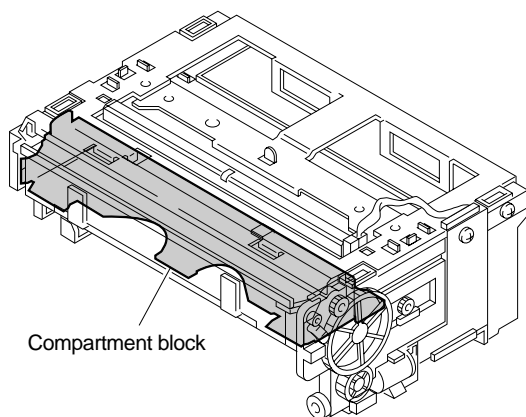
1. Turn the power off.
2. Remove the upper lid. (Refer to Section 2-3-1.)
3. Remove the plate MD assembly. (Refer to Section 2-4.)
4. Remove the cassette compartment. (Refer to Section 2-5.)

### 3. Cleaning Parts

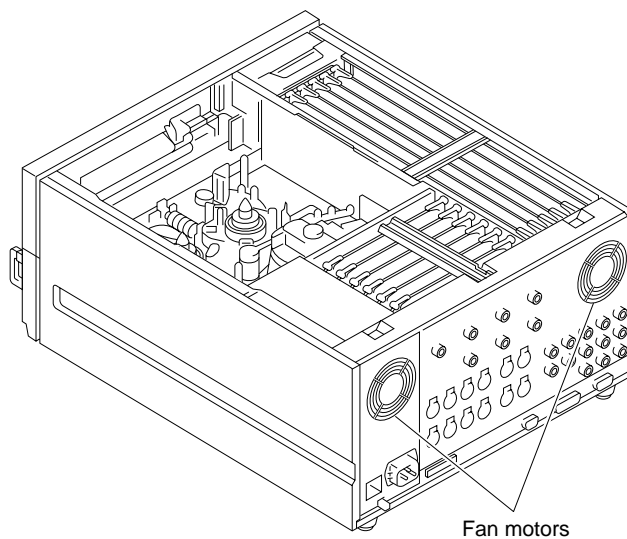
#### < Mechanical Deck Block >



#### < Cassette Compartment >



#### < Chassis >



### 5-2-3. Tape Running Surface of Upper Drum and Video Heads Cleaning

**WARNING**

Never contact the rotating drum.

Be sure to turn off the power and wait until the drum comes to a complete stop before cleaning.

**Caution**

The video heads are the part that can be damaged easily. Be careful not to damage the video heads during cleaning.

**Tools**

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

**Note**

Never use a cotton swab to clean the video heads.

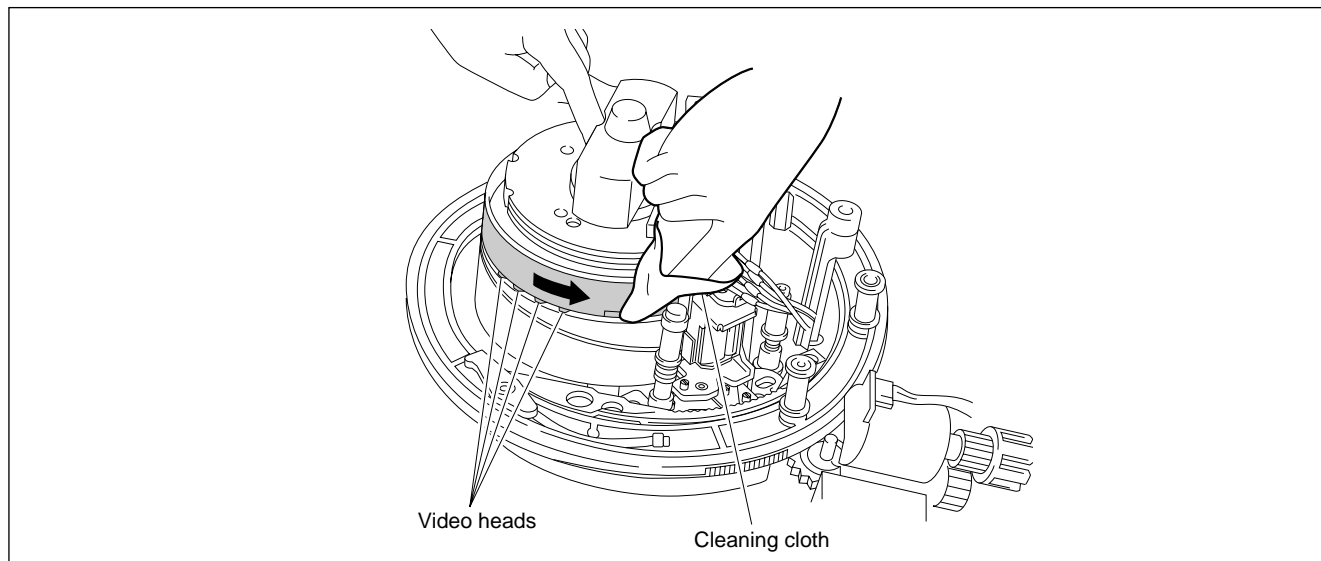
**Procedure**

1. Hold the cleaning cloth moistened with a cleaning fluid keeping it without becoming wrinkled. And then slightly press the cleaning cloth against the video heads.
2. Slowly rotate the upper drum counterclockwise two or three turns and clean the tape-running surface and video heads without moving the cleaning cloth.

**Note**

Be sure to rotate the upper drum counterclockwise and clean the video heads along the circumference. Do not rotate it in the opposite direction (clockwise) or clean the video heads in the vertical direction to avoid damaging the video heads and the brush slip ring assembly.

3. After cleaning, wipe them using a dry cleaning cloth two or three times.



## 5-2-4. Tape Running Surface of Lower Drum and Lead Surface Cleaning

### Caution

Be careful not to damage the lower drum (specially lead surface) during cleaning.  
Pay careful attention when cleaning the edge portion above the lower drum because it is located near the video heads.

### Tools

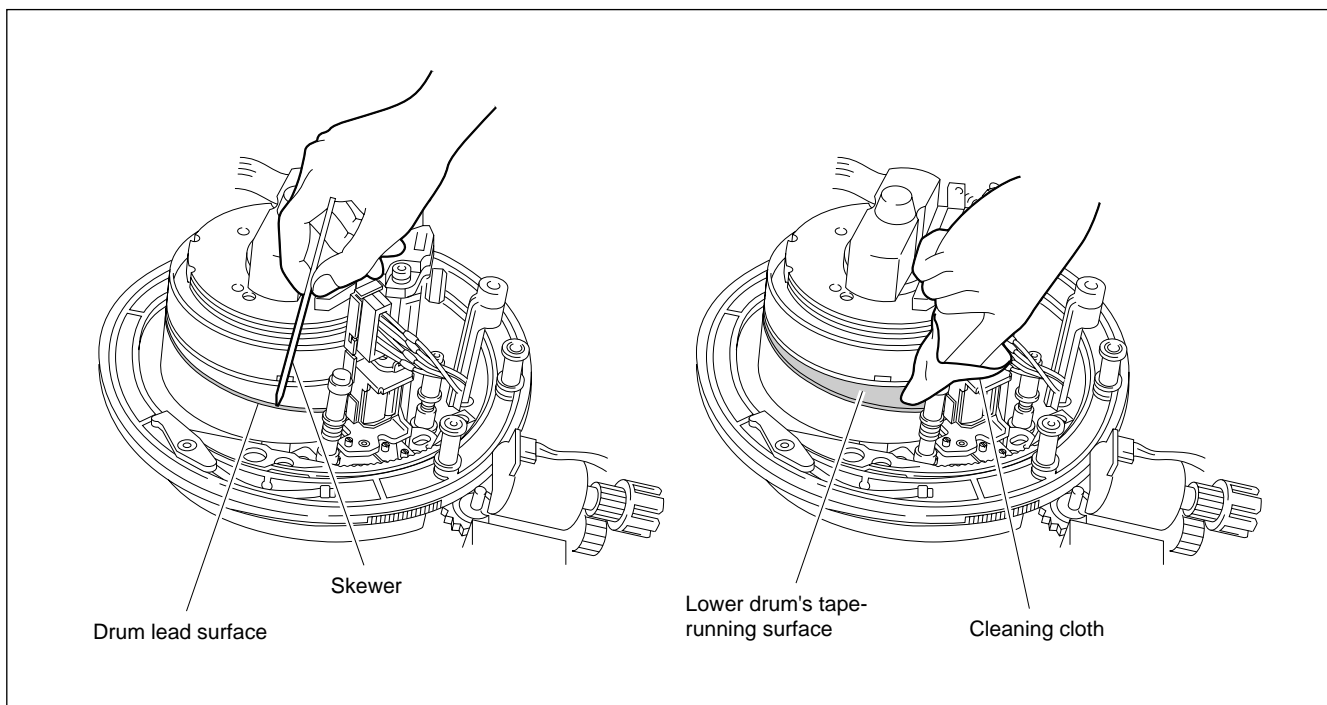
- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01
- Skewer or an equivalent (Never use a metallic skewer. )

### Procedure

1. As shown in the figure, remove the magnetic powder using a skewer (or an equivalent), running on the skewer on the drum lead surface.

#### Notes

1. Never use a metallic skewer to avoid damaging the tape-running surface.
2. Be sure to remove the magnetic powder completely.  
Tracking may be badly influenced if magnetic powder attaches to the drum lead surface.
2. Clean the drum lead surface and lower drum's tape-running surface (shaded portion in the figure) using a cleaning cloth moistened with a cleaning fluid.
3. After cleaning, wipe it using a dry cleaning cloth two or three times.



Tape Running Surface of Lower Drum and Lead Surface Cleaning

## 5-2-5. Stationary Heads Cleaning

### Caution

- Be careful not to damage the head surface when cleaning the stationary heads.

### Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

### Procedure

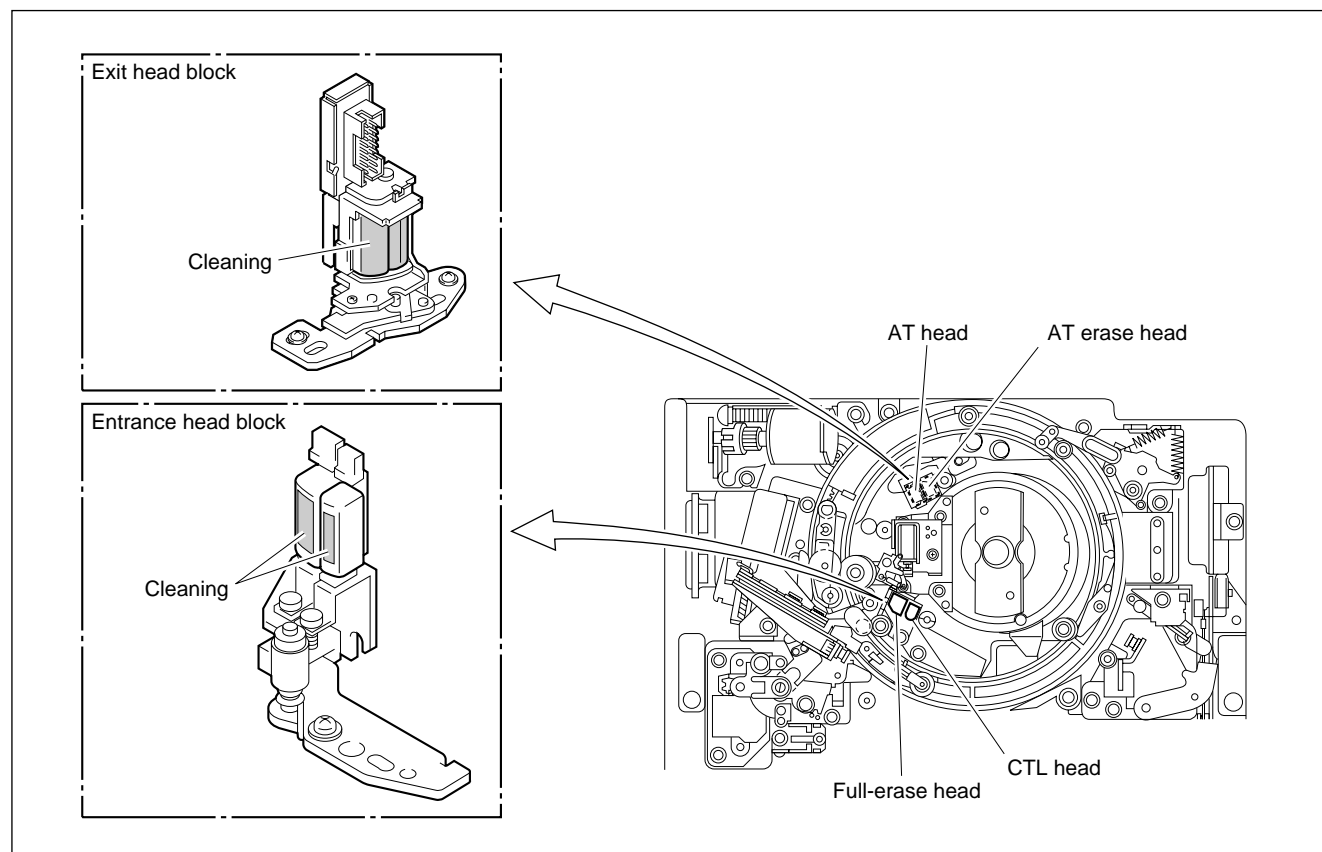
1. Clean the tape-running surfaces of the AT head, AT erase head, CTL head, and full-erase head in the vertical direction using a cleaning cloth moistened with a cleaning fluid.

### Note

Be sure to remove the magnetic powder completely.

An error may occur in the recording or playback if magnetic powder attaches to the head gap portion of the AT head, AT erase head, CTL head, and full-erase head.

2. After cleaning, wipe them using a dry cleaning cloth two or three times.



Stationary Heads Cleaning

### 5-2-6. Tape Running System and Tape Cleaner Cleaning

#### WARNING

The tape cleaner has a sharp edge. Do not touch the edge with bare hands.  
Pay careful attention when cleaning the tape cleaner.

#### Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

#### Procedure

1. Wipe off the surfaces of the tape cleaner using a paper (such as a sheet of paper of this manual) to chip the magnetic powder adhered on the tape cleaner.

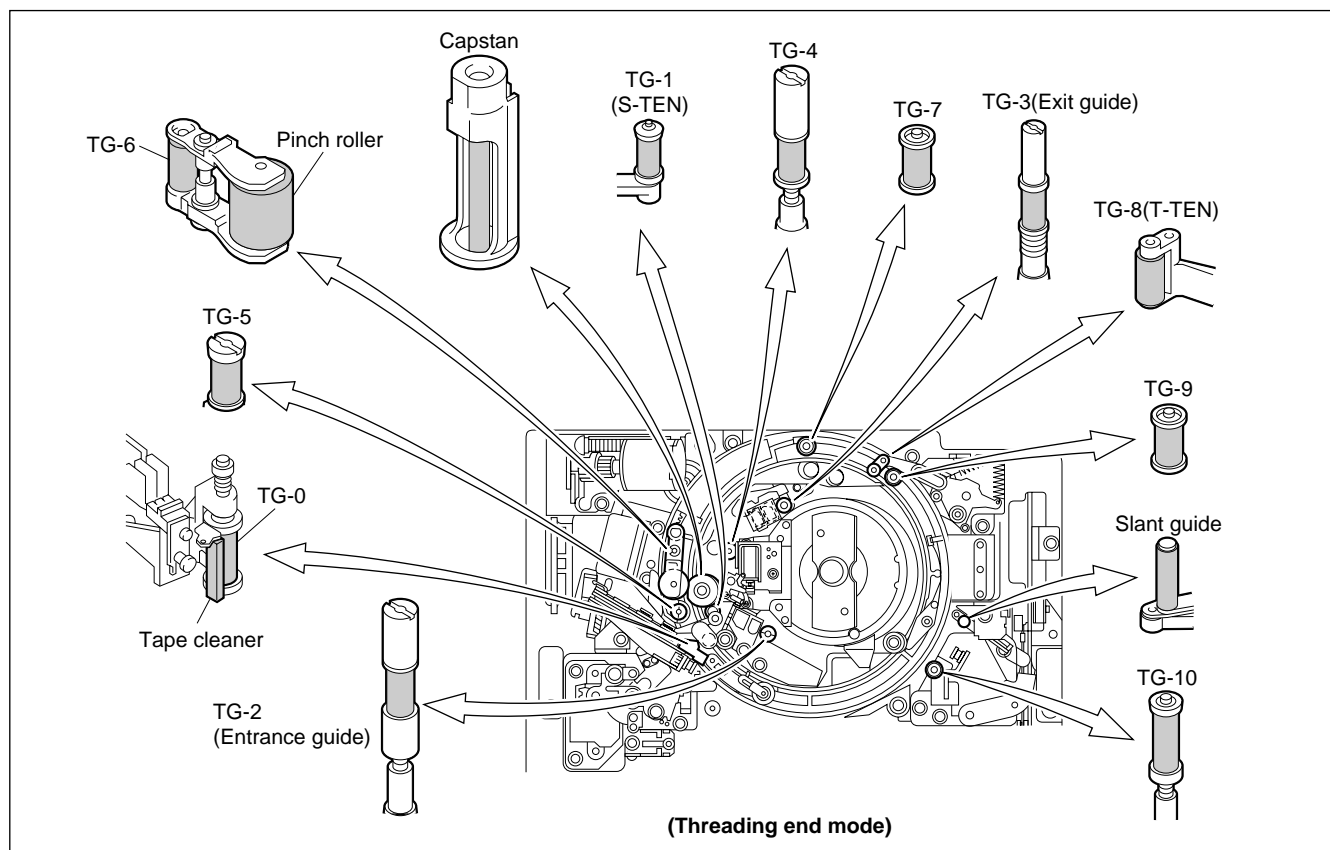
#### WARNING

Do not touch the edge portion of the tape cleaner with bare hands.

#### Note

Do not apply an excessive force to the tape cleaner to avoid damaging it.

2. Clean the tape-running surfaces (shaded portions in the figure) of each guide and the tape cleaner using cleaning cloth moistened with a cleaning fluid.
3. After cleaning, clean them using a dry cleaning cloth two or three times.



Tape Running System and Tape Cleaner Cleaning



### 5-2-7. Fan Motors Cleaning

#### Notice

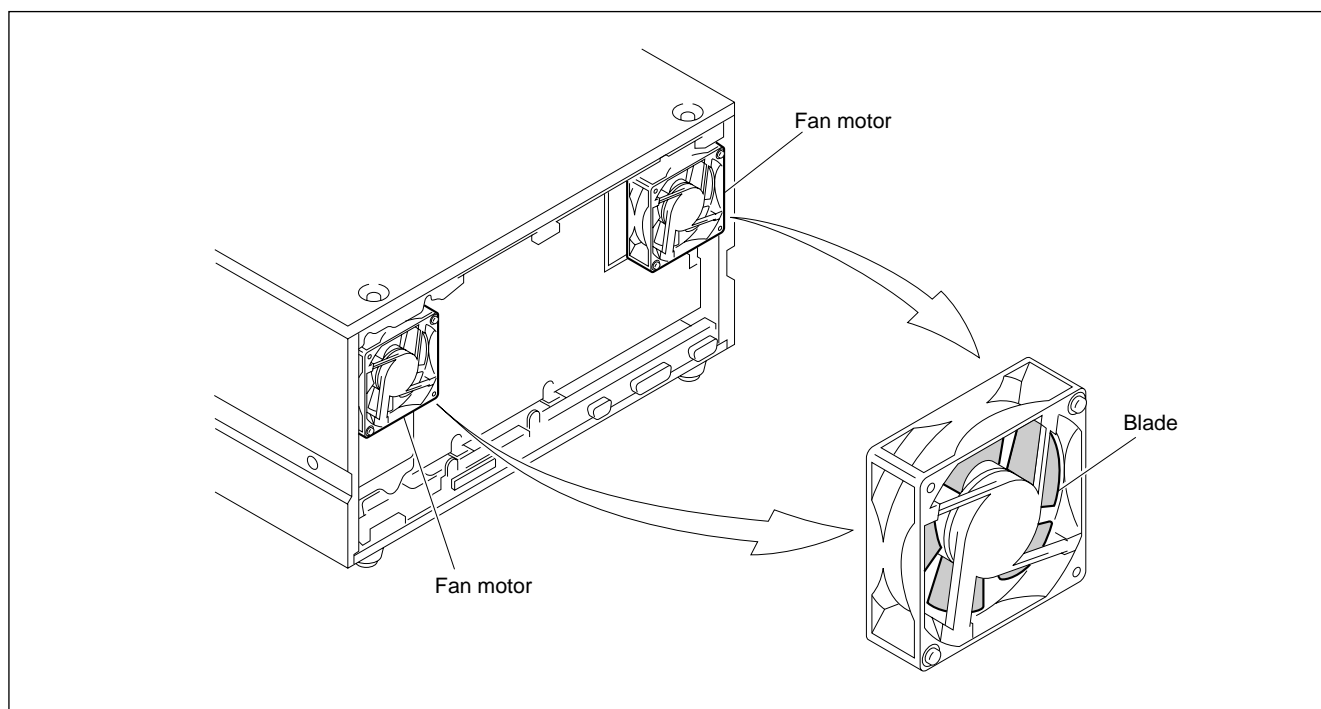
Clean the fan motor on the rear panel often because it accumulates dust easily. The dusty fan motors disturb the air flow through the unit, and a rise in the inside temperature of the unit may badly influence the performance and life of the unit.

#### Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01
- Vacuum cleaner

#### Procedure

1. Remove the power panel. (Refer to Section 2-3-4.)  
Disconnection of harnesses is not necessary.
2. Remove the connector panel. (Refer to Section 2-3-3.)  
Disconnection of harnesses is not necessary.
3. Remove the dust on the fan motors using a vacuum cleaner.
4. Clean the blades of the fan motors (shaded portion in the figure) using cleaning cloth moistened with a cleaning fluid.
5. Reattach the connector panel. (Refer to Section 2-3-3.)
6. Reattach the power panel. (Refer to Section 2-3-4.)



Fan Motor Cleaning

### 5-2-8. Cassette Compartment and Cassette Supports Cleaning

#### Notes

- Being careful not to apply an excessive force to the compartment block or mirror, clean the cassette compartment.
- Do not use an alcoholic chemical in cleaning of the lid and mirror to avoid cracking them.

#### Tools

- Cloth (or Gauze)
- Vacuum cleaner

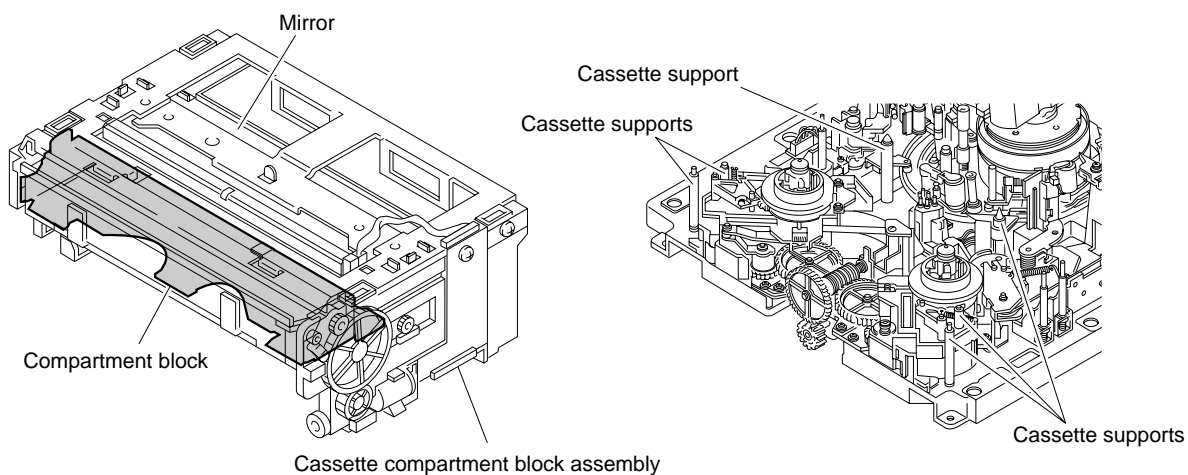
#### Procedure

1. Remove the cassette compartment from the unit. (Refer to Section 2-5.)
2. Remove the dust on the cassette compartment from the cassette insertion inlet using a vacuum cleaner.
3. Clean the compartment (shaded portion in the figure) using a dry cloth (or gauze).

#### Note

Do not apply an excessive force to the compartment block.

4. Clean the cassette supports on the mechanical deck using a dry cloth (or gauze).
5. Reinstall the cassette compartment. (Refer to Section 2-5.)



## 5-3. Video Head Tip Protrusion Check

When performing the periodic maintenance or inspection, measure the tip protrusion of the video heads using a head tip protrusion measurement gauge to check them for the upper drum assembly replacement.

If the tip protrusion of all heads are satisfying the following specification and more, it enables to recording and playing back on the tape.

Head	Specification
PB heads for Betacam/Betacam SP format	20 $\mu$ m
PB heads for Betacam SX format	22 $\mu$ m
REC heads for Betacam SX format	24 $\mu$ m

If the tip protrusion of any one head is under the specification, it is recommended that the upper drum assembly should be replaced early before occurring the trouble at the recording or playing back.

For the upper drum replacement, refer to Section 5-2 in the maintenance manual part 2, volume-1.

### Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-537-01
- Head tip protrusion measurement gauge: J-6530-650-A
- Torque screwdriver (6 kg•cm) (JB-5251): J-6252-510-A
- Torque screwdriver's bit (+2 mm, l = 75 mm): J-6323-420-A

## 5-3-1. Head Tip Protrusion Measurement

### Preparations for VTR

1. Remove the top plate. (Refer to Section 2-3-1.)
2. Remove the plate MD assembly. (Refer to Section 2-4.)
3. Remove the cassette compartment. (Refer to Section 2-5.)
4. Remove the brush slip ring assembly. (Refer to Section 5-3-2.)
5. Clean the outer circumference and video heads of the upper drum (shaded portions in Figure 1). (Refer to Section 5-2-3 for the cleaning method.)

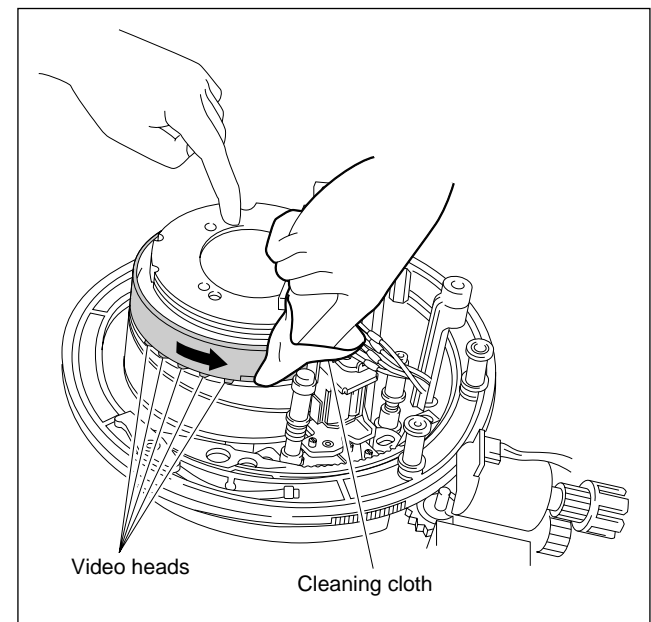


Figure 1. Cleaning of Drum

### Preparations for Head Tip Protrusion Measurement Gauge

This gauge is the precision equipment. Handle with care.

1. Loosen the adjustment screw fully (by turning it counterclockwise).
2. Clean the probe, positioning flange, and portion touching the drum of two legs. (Refer to Figure 3.)

#### Note

Do not apply excessive force to the probe during cleaning. If a deposit of  $\mu$ m order exists, measurement cannot be performed accurately.

## Setting of Head Tip Protrusion Measurement Gauge

### Note

Being careful not to damage the tape-running surface and video heads of the drum, set the gauge.

1. Turn the upper drum manually counterclockwise (↺) to align the screw hole to the rib of the threading ring as shown in Figure 2.

### Note

The upper drum position is determined as described above to put the probe of the head tip protrusion measurement gauge on the absence of a head. The following video head is first measured the protrusion value.

DNW-A100/A100P: PB A3 head

DNW-A50/A50P: PB A4 head

DNW-A45/A45P: PB A4 head

2. Check the value that the dial gauge pointer reads.
3. Position a probe between the PB B2 head and head.
- (Refer to Figure 2.)
4. Press the tip of two legs against the outer circumference of the drum's upper surface while keeping the base plate of the measurement gauge in parallel with the upper surface of the drum. Be sure to keep the probe of the measurement gauge sufficiently away from the drum.
5. Lower the measurement gauge slowly until the ridges of the two legs and positioning flange touch the upper drum while pushing two legs against the outer circumference of the drum's upper surface (applying force slightly to the measurement gauge in the direction indicated by the arrow). (Refer to Figure 3.)

### Notes

- Before placing a measurement gauge on the drum, ensure that the adjustment screw has been loosened fully.
  - Perform carefully and slowly so that the probe of a measurement gauge does not touch the outer circumference or video head on the drum. (Lower so that the probe is slightly higher than the two legs.)
6. Check to see the followings:
    - The probe is in the middle of the adjacent heads.
    - The positioning flange adheres closely to the outer circumference of the drum's upper surface.
    - The legs adhere closely to the outer circumference of the drum's upper surface.
    - The value that the dial gauge pointer reads is the same as before setting (in step 2).

7. Turn the adjustment screw clockwise until the dial gauge pointer rotates approximately a half turn.
8. Turn the outer circumference of the dial gauge to align zero (0) to the pointer.

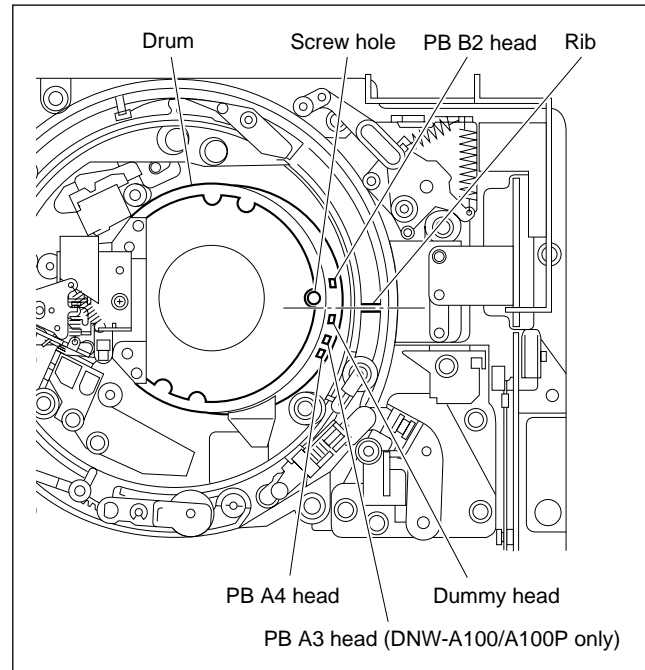


Figure 2. Setting of Drum Position

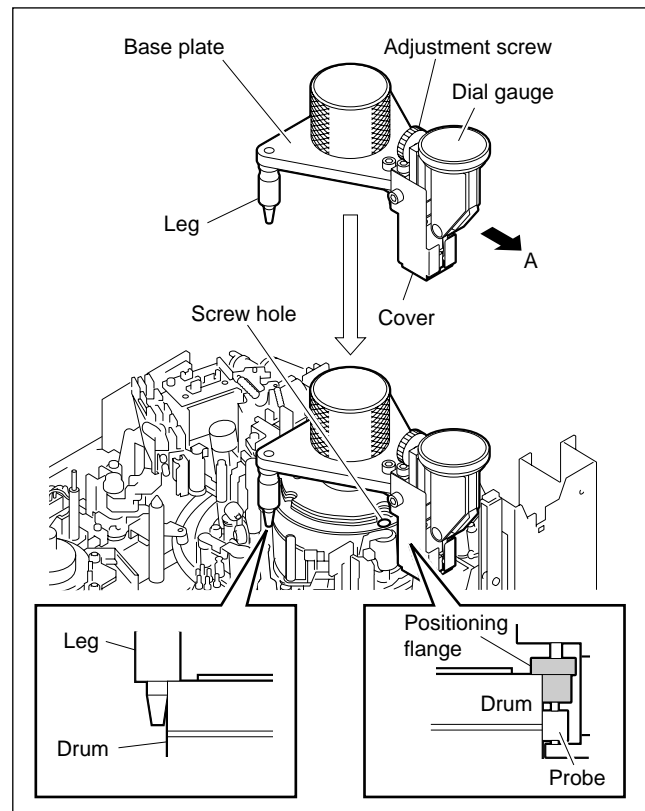


Figure 3. Setting of Head Tip Protrusion Measurement Gauge

## Measurement of Head Tip Protrusion

### Notes

- When turning the upper drum manually, hold the cover of the measurement gauge by your hand to not come to turn the gauge with the drum rotation.
- The number of the video heads are to measure as follows:  
DNW-A100/A100P: 22 heads  
DNW-A50/A50P/A45/A45P: 14 heads

- Turn the upper drum manually counterclockwise (↺) very slowly to approach a video head aside of the probe. (Refer to <A> in Figure 4.)
- Read the dial gauge pointer. (= Ha)

### Note

The scale of the dial gauge is 2 μm (0.002 mm) pitch.  
Clockwise: +. Counterclockwise: −.

- Turn the upper drum manually counterclockwise (↺) very slowly to center the video head in the probe. (Refer to <B> in Figure 4.)
- Read the dial gauge pointer. (= Hb)
- Calculate the real head tip protrusion Hr with the Ha and Hb.  
 $H_r = H_b - H_a$
- Calculate the head tip protrusion Hr for all heads with steps 1 through 5 performing.
- Measure and calculate the real head tip protrusion Hr for all heads again.

### Note

Do it two times for fear of measuring error.

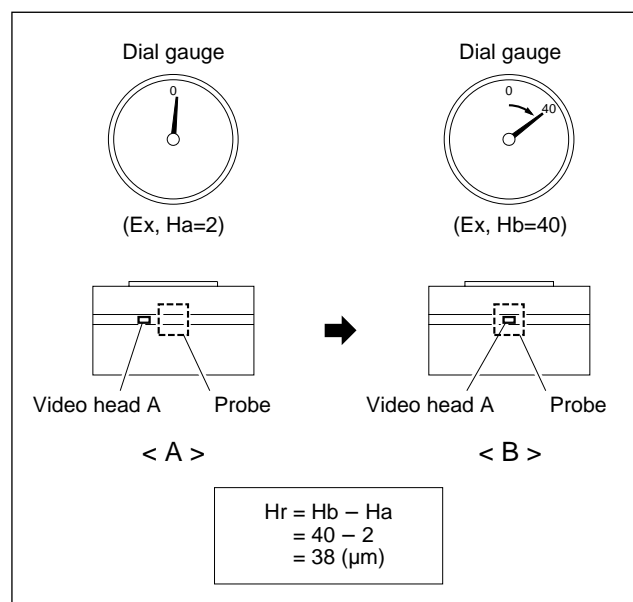


Figure 4. Example of Head Tip Protrusion Measurement

This table is in measure order of the heads.

Head name	Spec. (μm)	Head tip protrusion (Hr = Hb – Ha)			
		First time		Second time	
Dummy	—	(No need for measurement)			
PB A3*	22	=	—		= —
PB A4	22	=	—		= —
PB B3*	22	=	—		= —
PB B4	22	=	—		= —
Y-A	20	=	—		= —
C-A	20	=	—		= —
PB A5*	22	=	—		= —
PB A6	22	=	—		= —
PB B5*	22	=	—		= —
PB B6	22	=	—		= —
Erase	—	(No need for measurement)			
REC A	24	=	—		= —
REC B	24	=	—		= —
PB A7*	22	=	—		= —
PB A8	22	=	—		= —
PB B7*	22	=	—		= —
PB B8	22	=	—		= —
Y-B	20	=	—		= —
C-B	20	=	—		= —
PB A1*	22	=	—		= —
PB A2	22	=	—		= —
PB B1*	22	=	—		= —
PB B2	22	=	—		= —

※: Video heads for DNW-A100/A100P only

## Removal of Head Tip Protrusion Measurement Gauge

- Turn the upper drum manually counterclockwise (↺) very slowly to move a video head aside from the probe.
- Loosen the adjustment screw fully (by turning it counterclockwise).
- Lift up the positioning flange from the outer circumference of the drum's upper surface to a few millimeters, and then lift the measurement gauge slowly and remove it while pushing two legs against the outer circumference of the drum's upper surface (applying force slightly to the measurement gauge in the direction indicated by arrow A). (Refer to Figure 3.)

### Note

Perform carefully and slowly so that the probe of a measurement gauge does not touch the outer circumference or video head on the drum.

## 5-3-2. Brush Slip Ring Assembly Removal/Reinstallation

### Preparing tools

- Torque screwdriver (6 kg•cm) (JB-5251): J-6252-510-A
- Torque screwdriver's bit (+2 mm, l = 75 mm): J-6323-420-A

### Note

If replacing the brush slip ring assembly, refer to Section 3 in the maintenance manual part 2, volume-1.

### Removal

1. Unlock the connector CN2, then disconnect the flexible board from the connector CN2 on the SE-341 board.

#### Note

To unlock the connector CN2, pull the slider (white) of the connector.

2. Unscrew the two screws to remove the brush slip ring assembly.

#### Note

Do not apply any force forcibly to the brush slip ring assembly.

3. To take out the screws, turn the brush slip ring assembly upside down.

#### Note

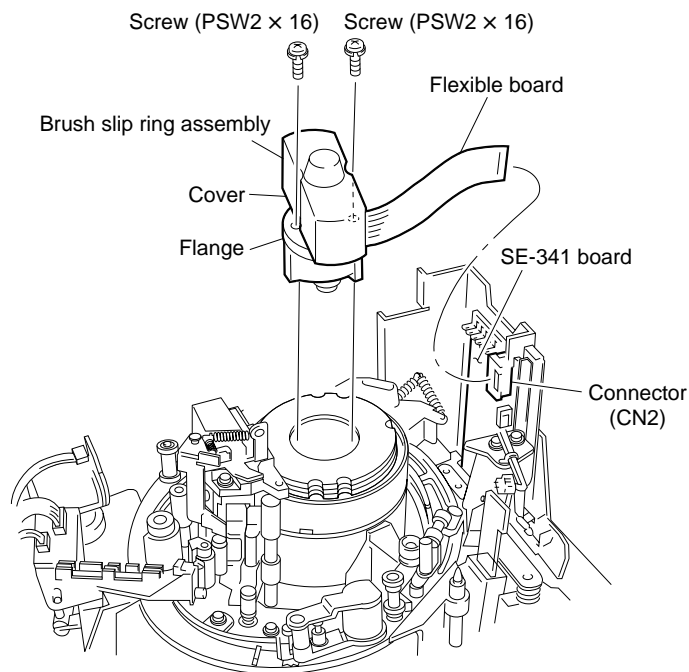
Be careful not to drop these screws in the cover.

### Reinstallation

4. Insert the two screws removed in step 2 into the screw holes of the brush slip ring assembly.
5. Reinstall the brush slip ring assembly in the direction shown in the figure.
6. Tighten the two screws alternately and gradually while pushing both sides of the flange uniformly.  
Tightening torque:  $14.7 \times 10^{-2} \text{ N}\cdot\text{m}$  {1.5 kgf•cm}
7. Insert the flexible board into the connector CN2 on the SE-341 board, then lock the connector.

### Notes

- Be sure to insert the flexible board into the connector CN2 with unlocked.  
(Refer to **Note** on step 1 for “Unlock”.)
- To lock the connector CN2, press in the slider (white) of the connector.



Tightening torque:  $14.7 \times 10^{-2} \text{ N}\cdot\text{m}$  {1.5 kgf•cm}

## Section 6

# Replacement of Plug-in Boards

### 6-1. Service Overview for Plug-in Board Replacement

#### 6-1-1. Notes on Plug-in Board Replacement

- For the board replacements except plug-in boards, refer to the maintenance manual part 2, volume-1.
- The plug-in board to be installed needs the state with completing the factory adjustment or equivalent.  
If not, perform the electrical adjustments and confirmations in according with instructions in the maintenance manual part 2, volume-1.
- Never touch (move) the adjustment parts that are not described in Section 6.  
If move these, requires to perform the electrical adjustments that are described in the maintenance manual part 2, volume-1.
- Do not execute (change) the adjustment items (data) in the maintenance mode that are not described in Section 6.  
If the adjustment item (data) has been executed (changed) carelessly, do not save the data and turn off the power of the DNW or execute “ALL DATA PREVIOUS” in each NV-RAM control menu. (Never execute “SAVE ALL ADJUST DATA” of each NV-RAM control menu.)
- It is recommended to record the states before replacement on a copy of setting check sheet in Appendix B.

In case of the change of setting in the adjustments and so on, this recorded setting check sheet is the convenient when resetting the setting after the replacement.

- The DM-89 board of the service parts code suffix-A cannot be used to the DNW.
- The TBC-23 board of the service parts code suffix-A cannot be used to the DNW.  
And the board numbers 1-648-543-13 and 1-648-543-14 among the TBC-23 board of the service parts code suffix-B cannot be used to the DNW in without completing the specified modification to them.  
Please consult your local Sony Sales Office/Service Center in detail.
- Check that the state of 525/625 system is following state before starting the electrical adjustment.  
For DNW-A100/A50/A45: 525/60 system  
For DNW-A100P/A50P/A45P: 625/50 system  
If not, switch the line system by the setup menu ITEM-013 : 525/625 SYSTEM SELECT in according with Section 7-2-2 in the operation manual.

#### **Importance**

If the 525/625 system is changed, the signal that had recorded on the HDD is erased.

## 6-1-2. Service Action before/after Plug-in Board Replacement

List up the service action (except function check) after replacing each plug-in board.  
Refer to “6-1-3. Pulling out /Insertion of Plug-in Board” for pulling out and insertion of board when Referring section Column of below table is shown “—”.

Board name	Referring section	Service action
AD-105 (BKNW-104)	Section 1-18	Electrical adjustments
APR-12	Section 6-2	Electrical adjustments and Shorting plugs setting
APR-13	Section 6-3	Electrical adjustments and Shorting plugs setting
DEC-65 (BKDW-505/506)	Section 1-16	Electrical adjustments
DIF-42	—	None
DIF-44 (BKNW-105)	—	None
DM-89	Section 6-4	Electrical adjustments
DPR-71	—	None
DPR-73	—	None
EQ-56	Section 6-5	Electrical adjustments
SS-63	Section 6-6	DIP switches setting, Setup menu resetting, Error logging data clear, and Calendar/Clock setting
SSX	—	DIP switches setting confirmation (Refer to Section 1-10-6.)
TBC-23	Section 6-7	Electrical adjustments and DIP switches setting
TBC-24	Section 6-8	Electrical adjustments
VPR-17	Section 6-9	Electrical adjustments

For the setting of switches and shorting plugs, and the resetting the setup menu (Main and Extended menus), need to record the setting states of before replacement.



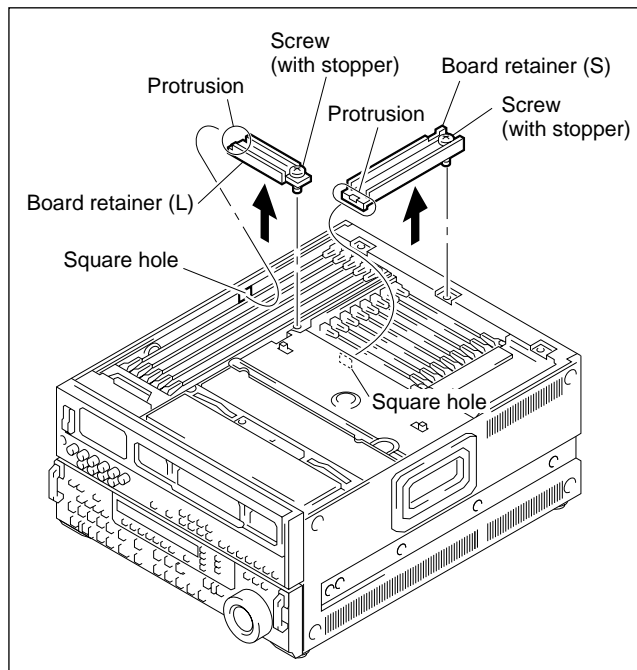
### 6-1-3. Plug-in Board Pulling out/Insertion

#### Note

Turn off the power of DNW and then wait 30 seconds before starting the service operation.

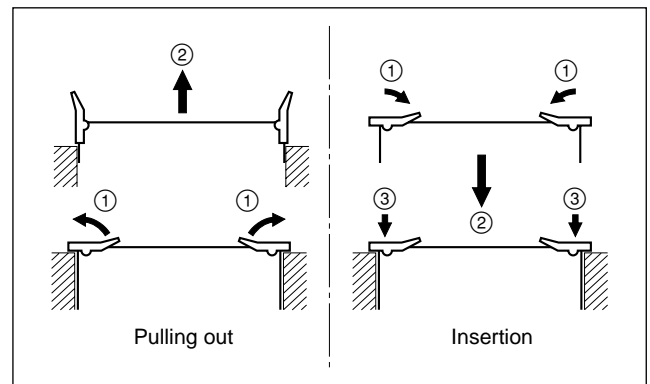
#### Pulling out

- (1) Remove the upper lid. (Refer to “2-3-1. Upper Lid, Side Panels, and Bottom Plate Removal/Installation”.)
- (2) Loosen a screw, and remove the board retainer (L) or (S).
- (4) Pull up the eject levers on the board to the direction of the arrows. (Disconnect it from the motherboard.)
- (5) Hold the eject levers and pull out slowly the board.



- (3) When pulling out the SSX, TBC-23, or TBC-24 board, disconnect the connected harness from its board.

SSX board: CN400  
 TBC-23 board: CN1  
 TBC-24 board: CN1



- (6) When removing the APR-12 or EQ-56 board, disconnect the connected harnesses from its board.

APR-12 board: CN500 (A-1) ..... 3P Red  
                   CN600 (G-1) ..... 3P Yellow  
 EQ-56 board: CN100 (B-7) ..... 6P White  
                   \*CN300 (A-2) ..... 3P White  
                   \*CN400 (G-1) ..... 3P Red  
                   CN500 (A-4) ..... 4P White  
                   CN600 (G-4) ..... 4P Red  
                   CN601 (G-5) ..... 4P Yellow  
                   \*CN1300 (A-3) ..... 3P Black  
                   \*CN1400 (G-2) ..... 3P Yellow  
                   CN1500 (A-5) ..... 4P Black  
 \*: DNW-A100/A100P only

#### Insertion

Perform in the reverse procedures of pulling out.

#### Notes

- After board insertion, press the two eject levers simultaneously and connect the firmly to the connector on the motherboard (MB-648 board).
- To reattach the board retainer, tighten the screw after inserting the protrusion of the board retainer into the square hole of chassis.

## 6-1-4. Equipment List

Shows the lists of the measuring equipment, signal generators, and tools to be appeared in Section 6.  
Right column is the board name that using equipment.

### List for DNW-A100/A50/A45

Analog component video signal generator	TEKTRONIX TSG-300 or equivalent	TBC-23/24
Analog composite video signal generators	TEKTRONIX TSG-170A or equivalent	DM-89, TBC-23/24, VPR-17
	TEKTRONIX 1410 or equivalent	VPR-17
Analog component waveform monitor	TEKTRONIX WFM300 or equivalent	DM-89, TBC-23/24, VPR-17
Analog composite waveform/vector monitor	TEKTRONIX 1750 or 1780R or equivalent	TBC-23/24, VPR-17
Oscilloscope	TEKTRONIX 2465B or equivalent	APR-12/13, DM-89, EQ-56, VPR-17, TBC-24
Spectrum analyzer	ADVANTEST R3261A or equivalent	DM-89
Network analyzer	ANRITSU MS420B or equivalent	DM-89
Audio signal generator	TEKTRONIX SG505-option 02 or equivalent	APR-12/13
Audio analyzer	TEKTRONIX AA501A-option 02 or equivalent	APR-12/13
Audio level meter	HEWLETT-PACKARD HP3400A or equivalent	APR-12
Frequency counter	ADVANTEST TR5821AK or equivalent	VPR-17
Digital voltmeter	ADVANTEST TR6845 or equivalent	DM-89
Extension boards	EX-377 (SONY part No. J-6269-810-A)	DM-89, EQ-56, TBC-23
	EX-555 (SONY part No. A-8277-211-A)	VPR-17
	EX-556 (SONY part No. A-8277-212-A)	APR-12/13
Extension harness	14P (SONY part No. 1-952-684-11)	TBC-24
Composite video monitor	For 525/60 (NTSC) system	All boards
	For 625/50 (PAL) system	VPR-17 <sup>(Note)</sup>
Terminators	75 $\Omega$ , BNC (max. 5 pcs.)	DM-89, TBC-23/24, VPR-17
BNC T adapter	75 $\Omega$	VPR-17
Shorting clips	(max. 2 pcs.)	APR-12/13, DM-89
Cleaning tape	BCT-5CLN (SONY standard products)	DM-89, TBC-23/24
Alignment tapes	CR5-1B (SONY part No. 8-960-096-41)	DM-89, EQ-56, TBC-23/24
	CR5-2A (SONY part No. 8-960-097-44)	DM-89, EQ-56, TBC-23/24
	CR8-1A (SONY part No. 8-960-097-45)	APR-12
	SR5-1 (SONY part No. 8-960-075-01)	EQ-56
Recording tape	BCT SX series (SONY standard products)	EQ-56

#### Note

If the DNW-A100/A50/A45 is operated on the 625/50 system, the adjustments for the 625/50 system are required at the electrical adjustments after the VPR-17 board replacement. In this time, the composite video monitor for 625/50 system is required to display the maintenance mode screen.

**List for DNW-A100P/A50P/A45P**

Analog component video signal generator	TEKTRONIX TSG-300 or equivalent	TBC-23/24
Analog composite video signal generators	TEKTRONIX TSG-271 or equivalent	DM-89, TBC-23/24, VPR-17
	TEKTRONIX 1411 or equivalent	VPR-17
Analog component waveform monitor	TEKTRONIX WFM300 or equivalent	DM-89, TBC-23/24, VPR-17
Analog composite waveform/vector monitor	TEKTRONIX 1751 or 1781R or equivalent	TBC-23/24, VPR-17
Oscilloscope	TEKTRONIX 2465B or equivalent	APR-12/13, DM-89, EQ-56, VPR-17, TBC-24
Spectrum analyzer	ADVANTEST R3261A or equivalent	DM-89
Network analyzer	ANRITSU MS420B or equivalent	DM-89
Audio signal generator	TEKTRONIX SG505-option 02 or equivalent	APR-12/13
Audio analyzer	TEKTRONIX AA501A-option 02 or equivalent	APR-12/13
Audio level meter	HEWLETT-PACKARD HP3400A or equivalent	APR-12
Frequency counter	ADVANTEST TR5821AK or equivalent	VPR-17
Digital voltmeter	ADVANTEST TR6845 or equivalent	DM-89
VISC phase adjustment tool	(SONY part No. J-6332-240-A)	TBC-23
Extension boards	EX-377 (SONY part No. J-6269-810-A)	DM-89, EQ-56, TBC-23
	EX-555 (SONY part No. A-8277-211-A)	VPR-17
	EX-556 (SONY part No. A-8277-212-A)	APR-12/13
Extension harness	14P (SONY part No. 1-952-684-11)	TBC-24
Composite video monitor	For 625/50 (PAL) system	All boards
	For 525/60 (NTSC) system	VPR-17 <sup>(Note)</sup>
Terminators	75 $\Omega$ , BNC (max. 5 pcs.)	DM-89, TBC-23/24, VPR-17
BNC T adapter	75 $\Omega$	VPR-17
Shorting clips	(max. 2 pcs.)	APR-12/13, DM-89
Cleaning tape	BCT-5CLN (SONY standard products)	DM-89, TBC-23/24
Alignment tapes	CR5-1B PS (SONY part No. 8-960-096-91)	DM-89, EQ-56, TBC-23/24
	CR5-2A PS (SONY part No. 8-960-098-44)	DM-89, EQ-56, TBC-23/24
	CR8-1A PS (SONY part No. 8-960-098-45)	APR-12
	CR8-1B PS (SONY part No. 8-960-096-86)	APR-12
	SR5-1P (SONY part No. 8-960-075-51)	EQ-56
Recording tape	BCT SX series (SONY standard products)	EQ-56

**Note**

If the DNW-A100P/A50P/A45P is operated on the 525/60 system, the adjustments for the 525/60 system are required at the electrical adjustments after the VPR-17 board replacement. In this time, the composite video monitor for 525/60 system is required to display the maintenance mode screen.

### 6-1-5. Content of Alignment Tapes

Describes the contents of alignment tapes to be appeared in Section 6.

CR5-1B (SONY part No. 8-960-096-41): For DNW-A100/A50/A45

CR5-1B PS (SONY part No. 8-960-096-91): For DNW-A100P/A50P/A45P

Time (min. : sec.)	Video	AFM*	LAU tracks	CTL track
0:00 -	RF sweep	No signal	No signal	CTL
2:00 -	60% H sweep (CTDM)	No signal	No signal	CTL
5:00 -	Pulse & Bar (CTDM)	No signal	No signal	CTL
8:00 -	60% multi-burst	No signal	No signal	CTL
11:00 -	Pulse & Bar	No signal	No signal	CTL
14:00 -	CR5-1B: 75% color-bar CR5-1B PS: 100% color-bar	400 kHz sine wave with 25 kHz deviation	No signal	CTL
16:30 -	CR5-1B: 75% color-bar CR5-1B PS: 100% color-bar	400 kHz sine wave with 75 kHz deviation	No signal	CTL
17:00 -	CR5-1B: 50% bowtie & 12.5T CR5-1B PS: 50% bowtie & 10T	No signal	No signal	CTL
19:00 -	Line 17	No signal	No signal	CTL
22:00 -	Quad phase	No signal	No signal	CTL
24:00 -	Flat filed	No signal	No signal	CTL
26:00 -	CR5-1B: 75% color-bar with Drop-out CR5-1B PS: 100% color-bar with Drop-out	No signal	No signal	CTL
28:00 - 30:00	Composite V sweep with VISC	No signal	No signal	CTL

※: DNW-A100/A50/A45/A100P/A50P/A45P can not playback AFM part.

CR5-2A (SONY part No. 8-960-097-44): For DNW-A100/A50/A45

CR5-2A PS (SONY part No. 8-960-098-44): For DNW-A100P/A50P/A45P

Time (min. : sec.)	Video	LAU tracks	CTL track
0:00 -	75% color-bar	No signal	CTL
3:00 -	60% multi-burst	No signal	CTL
6:00 -	CR5-2A: 50% bowtie & 12.5T CR5-2A PS: 50% bowtie & 10T	No signal	CTL
9:00 -	Pulse & Bar	No signal	CTL
11:00 -	Quad phase	No signal	CTL
13:00 - 15:00	Composite monoscope (Switching position is shifted.)	No signal	CTL

CR8-1A (SONY part No. 8-960-097-45): For DNW-A100/A50/A45

CR8-1A PS (SONY part No. 8-960-098-45): For DNW-A100P/A50P/A45P

Time (min. : sec.)	LAU tracks	CTL track	Video
0:00 -	1 kHz sine wave, 0 VU	CTL	No signal
2:55 -	No signal	CTL	No signal
3:00 -	10 kHz sine wave, -10 VU	CTL	No signal
4:55 -	No signal	CTL	No signal
5:00 -	1 kHz sine wave, -20 VU	CTL	No signal
5:55 -	No signal	CTL	No signal
6:00 -	40 Hz sine wave, -20 VU	CTL	No signal
6:25 -	No signal	CTL	No signal
6:30 -	7 kHz sine wave, -20 VU	CTL	No signal
6:55 -	No signal	CTL	No signal
7:00 -	10 kHz sine wave, -20 VU	CTL	No signal
7:25 -	No signal	CTL	No signal
7:30 -	15 kHz sine wave, -20 VU	CTL	No signal
7:55 -	No signal	CTL	No signal
8:00 - 10:00	1 kHz sine wave, 0 VU	1 kHz sine wave, 0VU	No signal

CR8-1B PS (SONY part No. 8-960-096-86): For DNW-A100P/A50P/A45P only

Time (min. : sec.)	LAU tracks	CTL track	Video	AFM
0:00 -	1 kHz sine wave, 0 VU	CTL	No signal	No signal
2:55 -	No signal	CTL	No signal	No signal
3:00 -	15 kHz sine wave, 0 VU	CTL	No signal	No signal
4:55 -	No signal	CTL	No signal	No signal
5:00 -	1 kHz sine wave, -20 VU	CTL	No signal	No signal
5:55 -	No signal	CTL	No signal	No signal
6:00 -	40 Hz sine wave, -20 VU	CTL	No signal	No signal
6:25 -	No signal	CTL	No signal	No signal
6:30 -	7 kHz sine wave, -20 VU	CTL	No signal	No signal
6:55 -	No signal	CTL	No signal	No signal
7:00 -	10 kHz sine wave, -20 VU	CTL	No signal	No signal
7:25 -	No signal	CTL	No signal	No signal
7:30 -	15 kHz sine wave, -20 VU	CTL	No signal	No signal
7:55 - 8:00	No signal	CTL	No signal	No signal

SR5-1 (SONY part No. 8-960-075-01): For DNW-A100/A50/A45

SR5-1P (SONY part No. 8-960-075-51): For DNW-A100P/A50P/A45P

Time (min. : sec.)	Digital video	Digital audio	CTL track
0:00 -	100% color-bar	1 kHz sine wave, -20 dB FS	CTL
2:00 -	100% color-bar	1 kHz sine wave, 0 dB FS	CTL
4:00 -	100% color-bar	-∞ dB FS	CTL
6:00 -	100% color-bar	20 Hz sine wave, -20 dB FS	CTL
8:00 -	100% color-bar	20 kHz sine wave, -20 dB FS	CTL
10:00 -	Ramp	1 kHz sine wave, -20 dB FS	CTL
12:00 -	Ramp	1 kHz sine wave, 0 dB FS	CTL
14:00 -	Ramp	-∞ dB FS	CTL
16:00 -	Ramp	20 Hz sine wave, -20 dB FS	CTL
18:00 -	Ramp	20 kHz sine wave, -20 dB FS	CTL
20:00 -	100% color-bar	1 kHz sine wave, -20 dB FS	CTL
22:00 -	100% color-bar	1 kHz sine wave, 0 dB FS	CTL
24:00 -	100% color-bar	-∞ dB FS	CTL
26:00 -	100% color-bar	20 Hz sine wave, -20 dB FS	CTL
28:00 - 30:00	100% color-bar	20 kHz sine wave, -20 dB FS	CTL

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## 6-2. APR-12 Board Replacement

The electrical adjustments are essential after the APR-12 board is replaced.

To perform the electrical adjustments, the following equipment and fixtures are required.

- Audio signal generator: TEKTRONIX SG505-option 02 or equivalent

### Note

When the optional kit BKNW-105 is equipped in the DNW, the audio signal generator is not required.

- Audio analyzer: TEKTRONIX AA501A-option 02 or equivalent

### Note

Always, the audio analyzer should be filtered through 80 kHz LPF.

- Audio level meter: HEWLETT-PACKARD HP3400A or equivalent
- Oscilloscope: TEKTRONIX 2465B or equivalent
- Extension board: EX-556 (SONY part No. A-8277-212-A)
- Shorting clips (2 pcs.)
- Alignment tape(s)

For DNW-A100/A50/A45: CR8-1A (SONY part No. 8-960-097-45)

For DNW-A100P/A50P/A45P: CR8-1A PS (SONY part No. 8-960-098-45) and  
CR8-1B PS (SONY part No. 8-960-096-86)

### 6-2-1. Replacement Procedure

#### Note

- Turn off the POWER switch before starting the replacement.
  - When the BKNW-105 is equipped in the DNW, skip step (13) and (14).
- (1) Remove the upper lid, board retainer (S), and APR-12 (original) board.  
(Refer to “6-1-3. Plug-in Board Pulling out/Insertion”.)
  - (2) Disconnect the two harnesses from CN500 and CN600 on the APR-12 (original) board.
  - (3) After inserting the extension board EX-556 to the slot for APR-12 board, and then connect a new APR-12 board to the extension board.
  - (4) Connect the two disconnected harnesses to CN500(red) and CN600(yellow) on the APR-12 (new) board.
  - (5) Clean the AT head. (Refer to “5-2-5. Stationary Heads Cleaning”.)
  - (6) Perform the electrical adjustments (Section 6-2-2).
  - (7) For DNW-A100P/A50P/A45P  
Return the ITEM-F01: AUDIO NR IN SP MODE of setup extend menu to “ON”.
  - (8) Return the states of S1100-1 on the SS-63 board, control panels, and connector panel to their original states.
  - (9) Turn off the power, and wait for 30 seconds.
  - (10) Remove the adjusted APR-12 board from the extension board, then pull out the extension board.  
(It is not necessary to disconnect the harnesses that are connected to the adjusted APR-12 board.)
  - (11) Set the shorting plugs on the adjusted APR-12 board to the same settings as the original board.  
(For shorting plugs, refer to Section 1-10-1.)
  - (12) Insert the adjusted APR-12 board.
  - (13) Remove the APR-13 board.
  - (14) Return the shorting plugs COR300, 301, 400, and 401 on the APR-13 board to their original settings, then reinsert its board.
  - (15) Reattach the board retainer (S) and upper lid.  
(Refer to “6-1-3. Plug-in Board Pulling out/Insertion”.)



## 6-2-2. Electrical Adjustments

### Adjustment Items

No.	Item	Adjustment point	Notes
0	Preparation		
1	Unity level adjustment	CH1 ⚙RV101/APR-12(A-3)	AUDIO OUTPUT CH1
		CH2 ⚙RV201/APR-12(E-3)	AUDIO OUTPUT CH2
2	Offset level adjustment	CH1 ⚙RV103/APR-12(D-2)	TP700/APR-12(G-3)
		CH2 ⚙RV203/APR-12(G-2)	TP700/APR-12(G-3)
3	LAU PB frequency response adjustment (OXIDE) (Audio head dumping adjustment)	CH1 ⚙RV501/APR-12(A-1) ⚙RV500/APR-12(A-1) [S500/APR-12(A-1)]	AUDIO OUTPUT CH1
		CH2 ⚙RV601/APR-12(G-1) ⚙RV600/APR-12(G-1) [S600/APR-12(G-1)]	AUDIO OUTPUT CH2
4	LAU PB frequency response adjustment (METAL) (DNW-A100P/A50P/A45P only)	CH1 ⚙RV502/APR-12(A-1)	AUDIO OUTPUT CH1
		CH2 ⚙RV602/APR-12(G-1)	AUDIO OUTPUT CH2
5	LAU Dolby level adjustment	CH1 ⚙RV503/APR-12(C-1)	TP501/APR-12(C-1)
		CH2 ⚙RV604/APR-12(E-1)	TP601/APR-12(E-1)
6	LAU PB level adjustment	CH1 ⚙RV504/APR-12(B-1)	AUDIO OUTPUT CH1
		CH2 ⚙RV605/APR-12(F-1)	AUDIO OUTPUT CH2
7	LAU PB phase adjustment	⚙RV603/APR-12(F-1)	AUDIO OUTPUT CH1/CH2

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#### Note

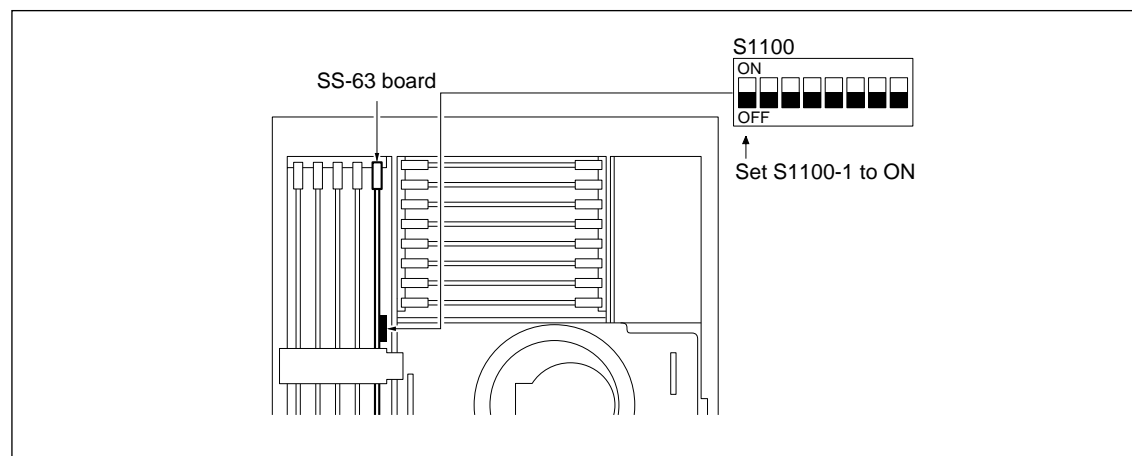
When AES/EBU I/F kit BKNW-105 is equipped in the DNW:

- Adjustment of No. 1 is not needed.
- Substitute MONITOR OUTPUT L/R connectors for AUDIO OUTPUT CH1/CH2 connectors respectively.  
(Because AUDIO OUTPUT CH1/CH2 connectors are not longer available after installing BKNW-105.)

### 0. Preparation

#### Setting of the DIP switch (DNW-A100P/A50P/A45P only)

(1) Set S1100-1 on SS-63 board to ON to treat the extended menu of the setup menu.



S1100 on SS-63 Board

Setting(Check) of the shorting plugs on the APR-12 board

Set the positions of shorting plugs as follows:

Ref. No.	Item	Position
COR100	Analog audio CH1 input level	+4
COR101	Analog audio CH1 input headroom	20
COR200	Analog audio CH2 input level	+4
COR201	Analog audio CH2 input headroom	20
COR300	Monitor L output headroom	20
COR301	Monitor L output level, fixed or variable	UNITY(L)
COR302	Monitor L output level	+4
COR400	Monitor R output headroom	20
COR401	Monitor R output level, fixed or variable	UNITY(R)
COR402	Monitor R output level	+4

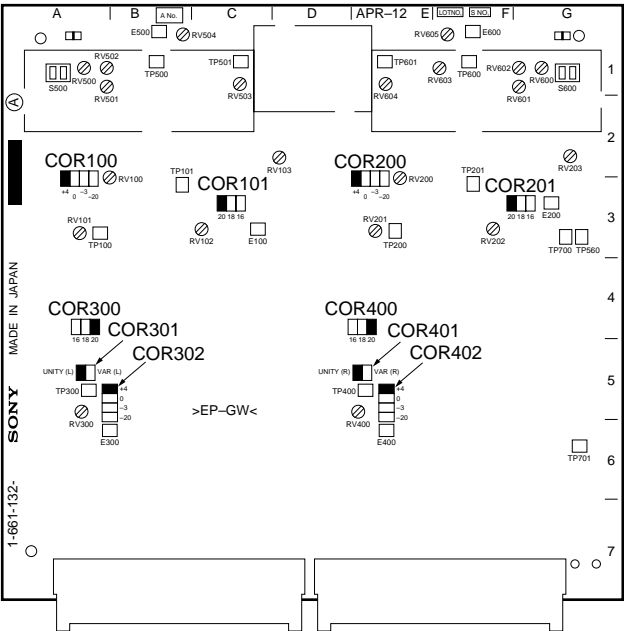
Setting of the shorting plugs on the APR-13 board

When the BKNW-105 is equipped in the DNW, skip this setting.

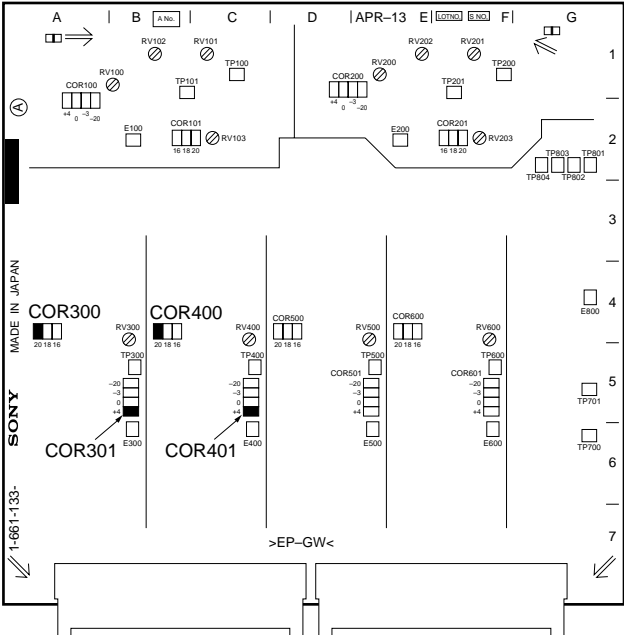
- (1) Remove the APR-13 board.
- (2) Set the positions of shorting plugs as follows:

Ref. No.	Item	Position	Original setting (fill up)
COR300	Analog audio CH1 output headroom	20	
COR301	Analog audio CH1 output level	+4	
COR400	Analog audio CH2 output headroom	20	
COR401	Analog audio CH2 output level	+4	

- (3) Reinsert the APR-13 board.



APR-12 Board (Side A)

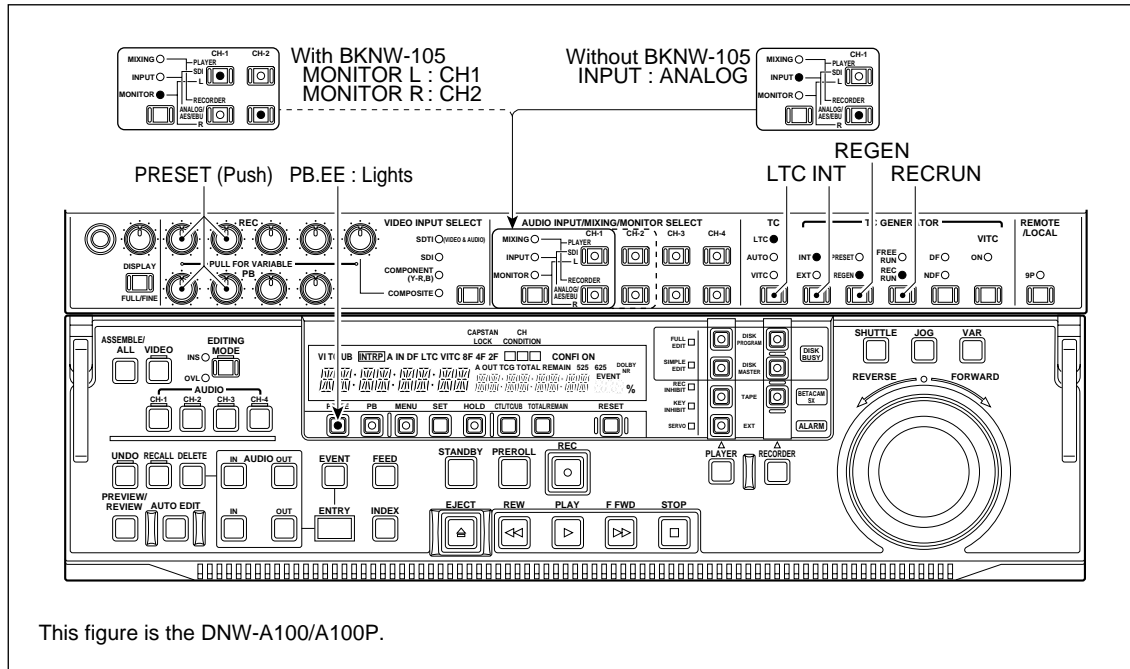


APR-13 Board (Side A)

## Setting of the DNW

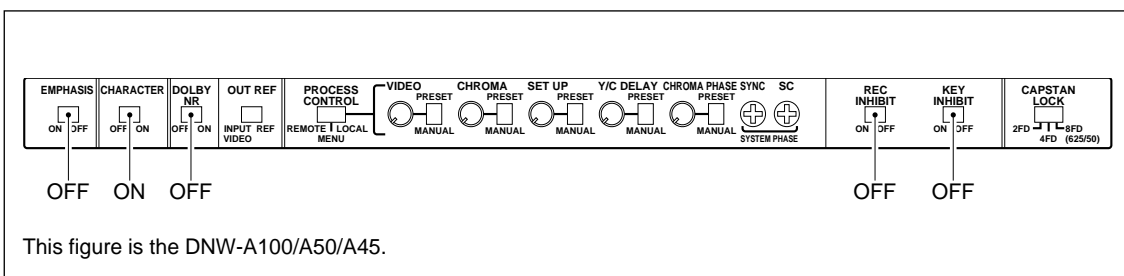
Turn on the power, and set each control panel and connector panel as shown below.

However, setting of the connector panel is not needed when the optional kit BKNW-105 is equipped in the DNW.



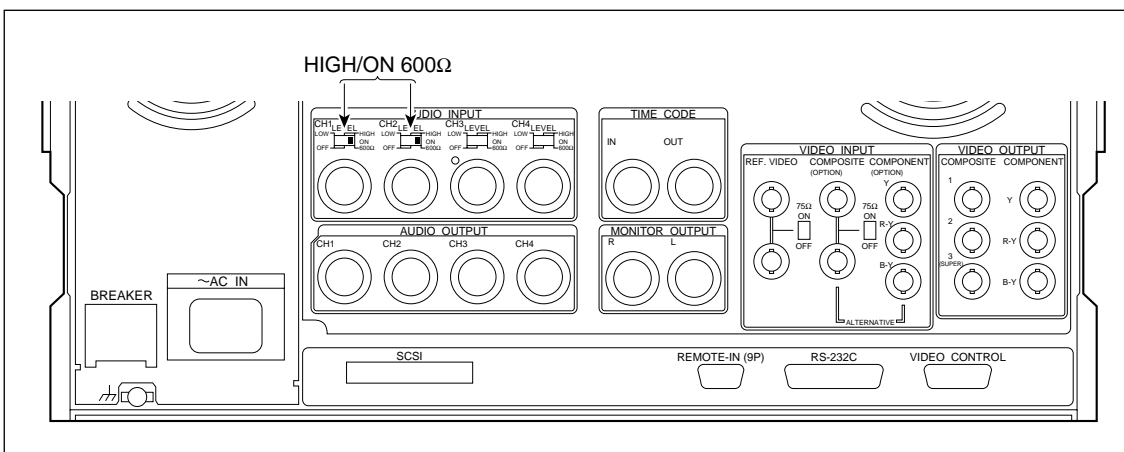
This figure is the DNW-A100/A100P.

## Upper/Lower Control Panels



This figure is the DNW-A100/A50/A45.

## Sub Control Panel



## Connector Panel

### Setting of the setup extend menu

- For the DNW-A100/A50/A45  
None.
- For the DNW-A100P/A50P/A45P  
Set the ITEM-F01: AUDIO NR IN SP MODE to “SW”.

#### Notes

- To display the ITEM-F00 series, turn the search dial while pressing the PLAY button.
- After adjustments are completed, return the ITEM-F01 to “ON”.

## 1. Unity Level Adjustment

#### Note

When the optional kit BKNW-105 is equipped in the DNW, “Unity Level Adjustment” is not needed.

Measuring equipment: Audio analyzer (dBm measurement mode, 80 kHz LPF)

#### Note

More than 20 minutes should elapse after turning the power on, when this adjustment is performed.

### CH1 adjustment

- Input the audio signal 1 kHz, +4.0 dBm(600  $\Omega$ ) to AUDIO INPUT CH1 connector.
- Connect the input of audio analyzer to AUDIO OUTPUT CH1 connector.
- Perform adjustment.

Adjustment point:  $\bullet$ RV101/APR-12(A-3)

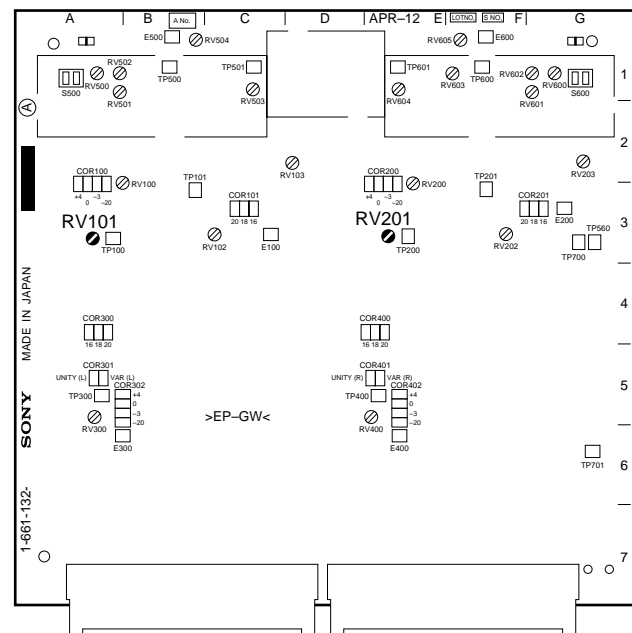
Specification: +4.0  $\pm$  0.1 dBm (at 600  $\Omega$  load)

### CH2 adjustment

- Input the audio signal 1 kHz, +4.0 dBm(600  $\Omega$ ) to AUDIO INPUT CH2 connector.
- Connect the input of audio analyzer to AUDIO OUTPUT CH2 connector.
- Perform adjustment.

Adjustment point:  $\bullet$ RV201/APR-12(E-3)

Specification: +4.0  $\pm$  0.1 dBm (at 600  $\Omega$  load)



APR-12 Board (Side A)

## 2. Offset Level Adjustment

Measuring equipment: Oscilloscope

### Note

More than 20 minutes should elapse after turning the power on, when this adjustment is performed.

- (1) Short-circuit TP101/APR-12(B-3) and E100/APR-12(C-3) with a shorting clip.
- (2) Short-circuit TP201/APR-12(F-3) and E200/APR-12(G-3) with a shorting clip.
- (3) Connect and set the oscilloscope as follows:  
 CH-1: TP700/APR-12(G-3), DC 5 V/DIV, 2  $\mu$ s/DIV  
 CH-2: TP701/APR-12(G-6), DC 5 V/DIV  
 Trigger: CH-2, - slope
- (4) Adjust  $\text{RV103/APR-12(D-2)}$  so that the audio CH1 part of the waveform at TP700 makes the same waveform to the Figure 1 (left side).
- (5) Adjust  $\text{RV203/APR-12(G-2)}$  so that the audio CH2 part of the waveform at TP700 makes the same waveform to the Figure 1 (right side).

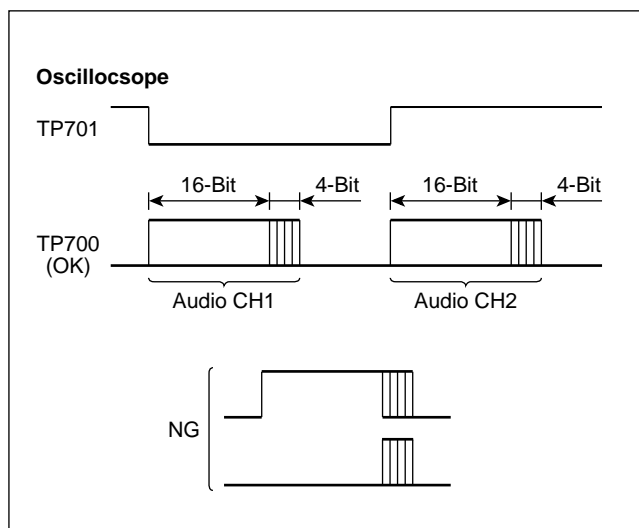
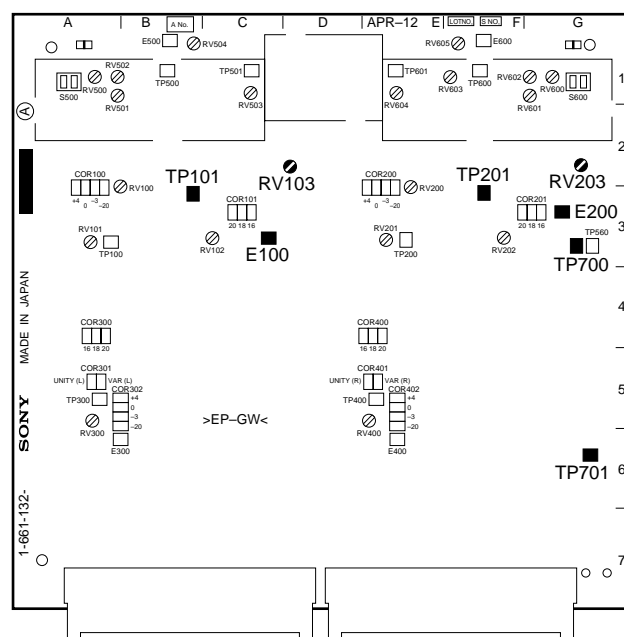


Figure 1. Waveform of CH1/CH2 Offset Level Adjustment

- (6) Disconnect the shorting clips from TP101, TP201, E100, and E200.



APR-12 Board (Side A)

### 3. LAU PB Frequency Response Adjustment (OXIDE)

Measuring equipment: Audio analyzer (dB ratio measurement mode, 80 kHz LPF)

#### CH1 adjustment

- Connect the input of audio analyzer to AUDIO OUTPUT CH1 connector.  
However, when the optional kit BKNW-105 is equipped in the DNW, connect the audio analyzer to MONITOR OUTPUT L connector.
- Playback the following specified portions (−20 VU) of the alignment tape CR8-1A or CR8-1A PS, and perform the adjustments and checks.  
(DNW-A100/A50/A45: CR8-1A, DNW-A100P/A50P/A45P: CR8-1A PS)

Playback portion	Specifications[dB]		Adjustment point
	DNW-A100/A50/A45	DNW-A100P/A50P/A45P	
5:00 to 5:55 (1 kHz, −20 VU)	Measured value makes 0 dB (reference).	Measured value makes 0 dB (reference).	—
6:00 to 6:25 (40 Hz, −20 VU)	C.V. $\begin{smallmatrix} +0.7 \\ -1.7 \end{smallmatrix}$	C.V. $\begin{smallmatrix} +0.7 \\ -1.7 \end{smallmatrix}$	(Check only)
6:30 to 6:55 (7 kHz, −20 VU)	C.V. $\pm 0.3$	C.V. $\pm 0.4$	●RV501/APR-12(A-1)
7:00 to 7:25 (10 kHz, −20 VU)	C.V. $\pm 0.3$	C.V. $\pm 0.4$	(Check only)
7:30 to 7:55 (15 kHz, −20 VU)	C.V. $\begin{smallmatrix} +0.3 \\ -1.0 \end{smallmatrix}$	C.V. $\begin{smallmatrix} -1.0 \\ -1.7 \end{smallmatrix}$	●RV500/APR-12(A-1)

#### Note

The correction values (C.V.) are given on the label of the alignment tape.

If the specification for RV500 adjustment is not satisfied, readjust after changing the setting of S500/APR-12(A-1).

#### CH2 adjustment

- Connect the input of audio analyzer to AUDIO OUTPUT CH2 connector.  
However, when the optional kit BKNW-105 is equipped in the DNW, connect the audio analyzer to MONITOR OUTPUT R connector.
- Playback the following specified portions (−20 VU) of the alignment tape CR8-1A or CR8-1A PS, and perform the adjustments and checks.  
(DNW-A100/A50/A45: CR8-1A, DNW-A100P/A50P/A45P: CR8-1A PS)

Playback portion	Specifications[dB]		Adjustment point
	DNW-A100/A50/A45	DNW-A100P/A50P/A45P	
5:00 to 5:55 (1 kHz, −20 VU)	Measured value makes 0 dB (reference).	Measured value makes 0 dB (reference).	—
6:00 to 6:25 (40 Hz, −20 VU)	C.V. $\begin{smallmatrix} +0.7 \\ -1.7 \end{smallmatrix}$	C.V. $\begin{smallmatrix} +0.7 \\ -1.7 \end{smallmatrix}$	(Check only)
6:30 to 6:55 (7 kHz, −20 VU)	C.V. $\pm 0.3$	C.V. $\pm 0.4$	●RV601/APR-12(G-1)
7:00 to 7:25 (10 kHz, −20 VU)	C.V. $\pm 0.3$	C.V. $\pm 0.4$	(Check only)
7:30 to 7:55 (15 kHz, −20 VU)	C.V. $\begin{smallmatrix} +0.3 \\ -1.0 \end{smallmatrix}$	C.V. $\begin{smallmatrix} -1.0 \\ -1.7 \end{smallmatrix}$	●RV600/APR-12(G-1)

#### Note

The correction values (C.V.) are given on the label of the alignment tape.

If the specification for RV600 adjustment is not satisfied, readjust after changing the setting of S600/APR-12(G-1).

#### 4. LAU PB Frequency Response Adjustment (METAL)

##### Note

Perform this adjustment for only DNW-A100P/A50P/A45P.

Measuring equipment: Audio analyzer (dB ratio measurement mode, 80 kHz LPF)

##### CH1 adjustment

- Connect the input of audio analyzer to AUDIO OUTPUT CH1 connector.  
However, when the optional kit BKNW-105 is equipped in the DNW, connect the audio analyzer to MONITOR OUTPUT L connector.
- Playback the following specified portions (−20 VU) of alignment tape CR8-1B PS, and perform the adjustment and checks.

Play back portion	Specifications[dB]	Adjustment point
5:00 to 5:55 (1 kHz, −20 VU)	Measured value makes 0 dB (reference).	—
6:00 to 6:25 (40 Hz, −20 VU)	C.V. $\pm 0.7$ −1.7	(Check only)
6:30 to 6:55 (7 kHz, −20 VU)	C.V. $\pm 0.3$	(Check only)
7:00 to 7:25 (10 kHz, −20 VU)	C.V. $\pm 0.4$	(Check only)
7:30 to 7:55 (15 kHz, −20 VU)	C.V. $\pm 0.5$	●RV502/APR-12(A-1)

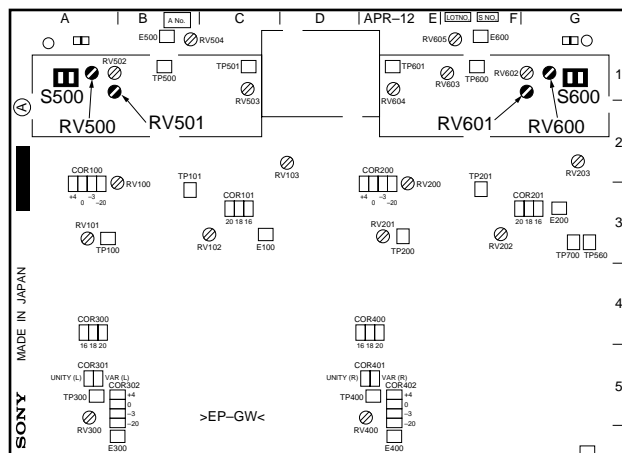
The correction values (C.V.) are given on the label of the alignment tape.

##### CH2 adjustment

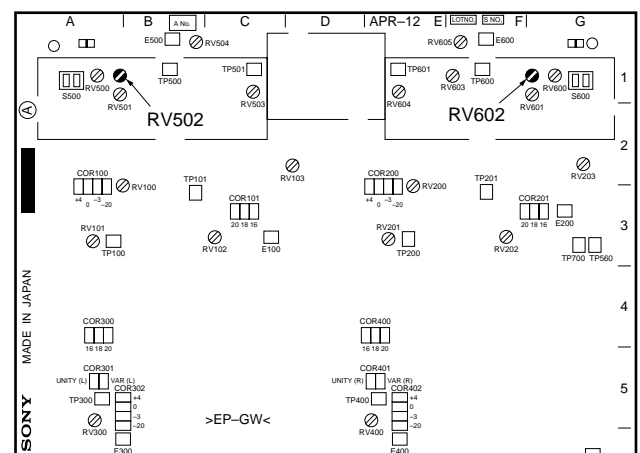
- Connect the input of audio analyzer to AUDIO OUTPUT CH2 connector.  
However, when the optional kit BKNW-105 is equipped in the DNW, connect the audio analyzer to MONITOR OUTPUT R connector.
- Playback the following specified portions (−20 VU) of alignment tape CR8-1B PS, and perform the adjustment and checks.

Play back portion	Specifications[dB]	Adjustment part
5:00 to 5:55 (1 kHz, −20 VU)	Measured value makes 0 dB (reference).	—
6:00 to 6:25 (40 Hz, −20 VU)	C.V. $\pm 0.7$ −1.7	(Check only)
6:30 to 6:55 (7 kHz, −20 VU)	C.V. $\pm 0.3$	(Check only)
7:00 to 7:25 (10 kHz, −20 VU)	C.V. $\pm 0.4$	(Check only)
7:30 to 7:55 (15 kHz, −20 VU)	C.V. $\pm 0.5$	●RV602/APR-12(G-1)

The correction values (C.V.) are given on the label of the alignment tape.



APR-12 Board (Side A) (For OXIDE)



APR-12 Board (Side A) (For METAL)

## CH1 adjustment

- ## CH2 adjustment

- 1-661-132-  
SONY  
MADE IN JAPAN
- A B C D E F G H
- APR-12 E [LITHO] [S.M.] F I G
- RV505 E600 RV603 TP600 RV602 RV600 RV601 RV604
- RV502 RV500 TP500 TP501 RV503
- TP501 TP601 RV604
- RV504
- SS00 RV500 RV501
- COR100 4+ 0 -30 RV100 TP101 COR101 20 18 16 RV101 TP100 RV102 E100
- COR200 16 18 20 COR400 16 18 20
- COR301 4+ 0 -30 COR302 4+ 0 -30 TP300 RV300 E300
- UNITY (L) VAR (L) COR301 VAR (R) COR402 4+ 0 -30 TP400 RV400 E400
- TP700 TP560 TP701
- RV200 TP200 RV201 RV202 RV203
- 1 2 3 4 5 6 7
- >EP-GW<

DNW-A100/A50/A45  
DNW-A100P/A50P/A45P





## 7. LAU PB Phase Adjustment

Measuring equipment: Oscilloscope (X-Y mode)

- (1) Connect and set the oscilloscope as follows:

CH-1: Pin 2 (X) of AUDIO OUTPUT CH1 connector [GND: Pin 1(G)], AC

CH-2: Pin 2 (X) of AUDIO OUTPUT CH2 connector [GND: Pin 1(G)], AC

However, when the optional kit BKNW-105 is equipped in the DNW, connect CH1 and CH2 to MONITOR OUTPUT L and R connectors respectively.

CH-1: Pin 2 (X) of MONITOR OUTPUT L connector [GND: Pin 1(G)], AC

CH-2: Pin 2 (X) of MONITOR OUTPUT R connector [GND: Pin 1(G)], AC

### Note

An XLR-to-pigtail cable is very convenient to connect between the oscilloscope and the above-mentioned connectors. Prepare two XLR-to-pigtail cables for this adjustment.

And connect the XLR plug end of the cable to the above mentioned connector and the pigtailed end to the oscilloscope. The cables for CH1 and CH2 shall be the same in length and have the same wire color on the pigtailed end.

- (2) For the DNW-A100/A50/A45, playback the 10 kHz,  $-10$  VU portion (3:00 to 4:55) of the alignment tape CR8-1A.

For the DNW-A100P/A50P/A45P, playback the 15 kHz, 0 VU portion (3:00 to 4:55) of the alignment tape CR8-1B PS.

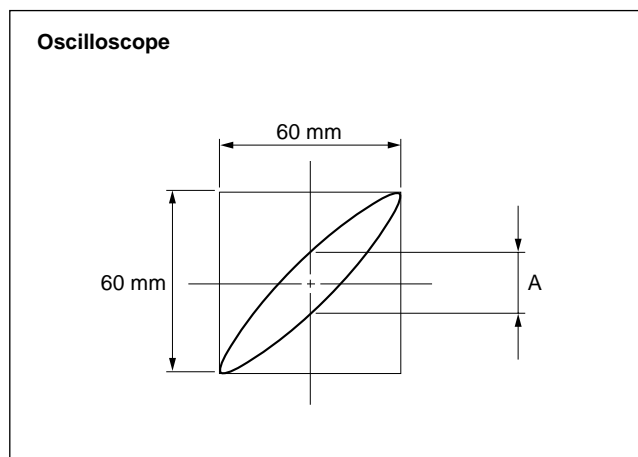
- (3) Observe the lissajous waveform on the oscilloscope.

- (4) Align the vertical and horizontal amplitudes of lissajous waveform to 60 mm square with the VOLTS/DIV and VAR controls of the oscilloscope.

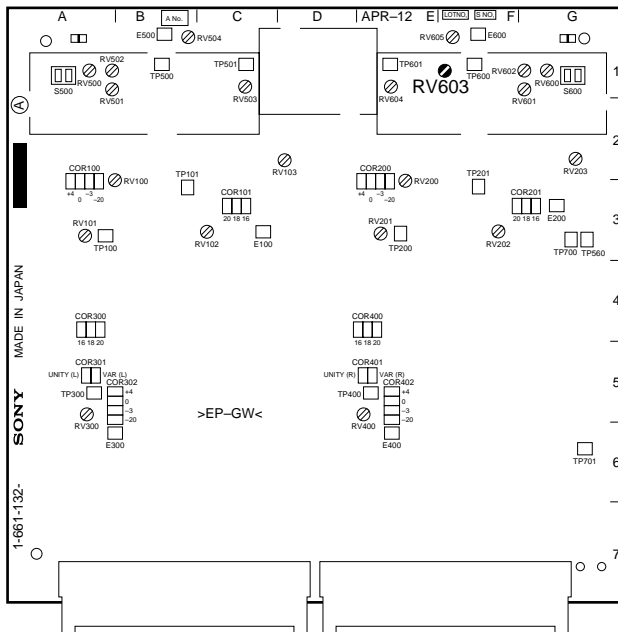
- (5) Minimize the phase difference  $A$  of lissajous waveform.

Adjustment point: RV603/APR-12(F-1)

Specification:  $A \leq 5.2$  mm (Refer to Figure 2.)



**Figure 2. Waveform of LAU PB Phase Adjustment**



**APR-12 Board (Side A)**

## 6-3. APR-13 Board Replacement

The electrical adjustments are essential after the APR-13 board is replaced.

To perform the electrical adjustments, the following equipment and fixture are required.

- Audio signal generator: TEKTRONIX SG505-option 02 or equivalent
- Audio analyzer: TEKTRONIX AA501A-option 02 or equivalent

### Note

Always, the audio analyzer should be filtered through 80 kHz LPF.

- Oscilloscope: TEKTRONIX 2465B or equivalent
- Extension board: EX-556 (SONY part No. A-8277-212-A)
- Shorting clip (1 pc.)

### 6-3-1. Replacement Procedure

#### Note

Turn off the POWER switch before starting the replacement.

- (1) Remove the upper lid, board retainer (S), and APR-13 (original) board.  
(Refer to “6-1-3. Plug-in Board Pulling out/Insertion”.)
- (2) After inserting the extension board EX-556 to the slot for APR-13 board, and then connect a new APR-13 board to the extension board.
- (3) Perform the electrical adjustment (Section 6-3-2).
- (4) Return the states of the control panels and connector panel to their original states.
- (5) Turn off the power, and wait for 30 seconds.
- (6) Remove the adjusted APR-13 board from the extension board, then pull out the extension board.
- (7) Set the shorting plugs on the adjusted APR-13 board to the same settings as the original board.  
(For shorting plug, refer to Section 1-10-2.)
- (8) Reattach the board retainer (S) and upper lid after inserting the adjusted APR-13 board.  
(Refer to “6-1-3. Plug-in Board Pulling out/Insertion”.)

### 6-3-2. Electrical Adjustments

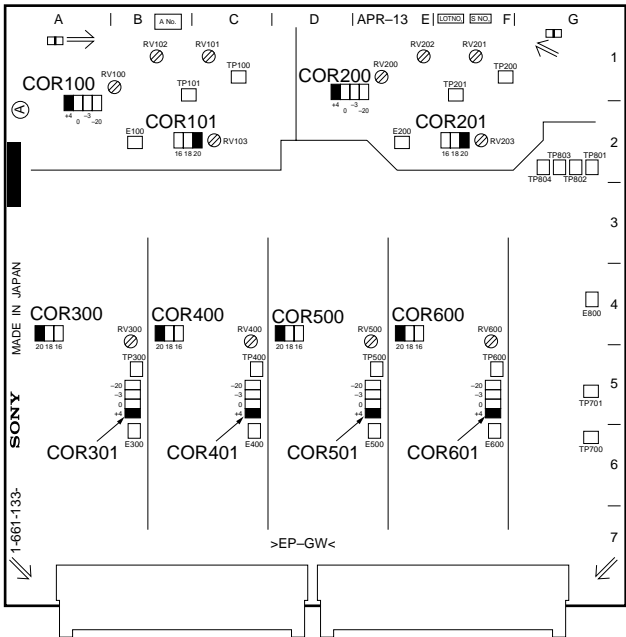
Adjustments Item			
No.	Item	Adjustment point	Notes
0	Preparation		
1	Unity level adjustment	CH3    ⚙RV101/APR-13(C-1)	AUDIO OUTPUT CH3
		CH4    ⚙RV201/APR-13(F-1)	AUDIO OUTPUT CH4
2	Offset level adjustment	CH3    ⚙RV103/APR-13(C-2)	TP700/APR-13(G-6)
		CH4    ⚙RV203/APR-13(F-2)	TP700/APR-13(G-6)

0. Preparation

Setting(Check) of the shorting plugs on the APR-13 board

Set the position of shorting plugs as follows:

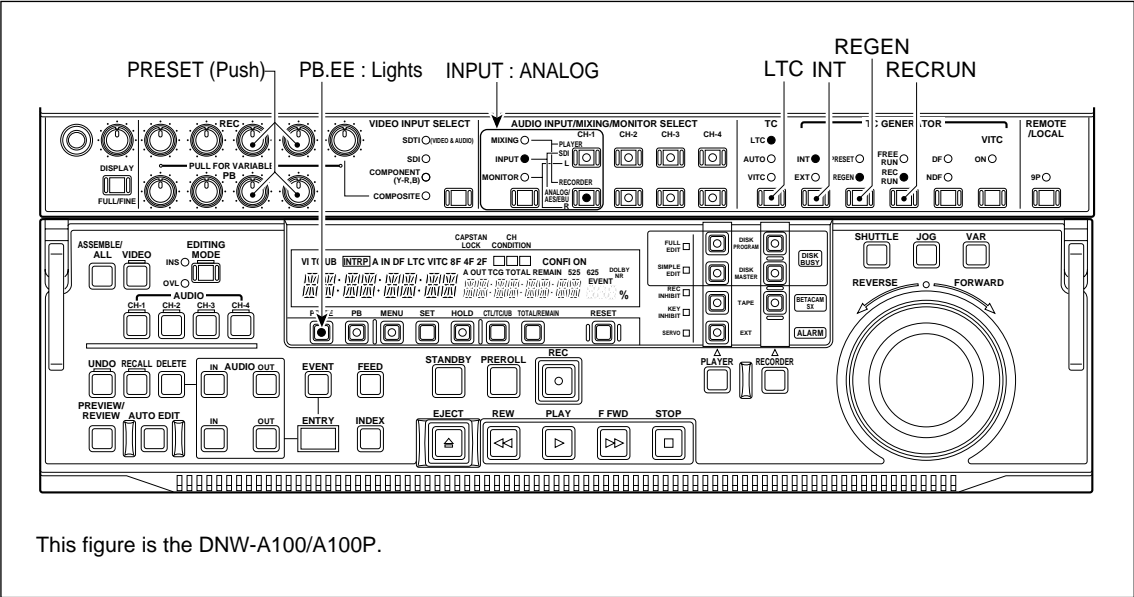
Ref. No.	Item	Position
COR100	Analog audio CH3 input level	+4
COR101	Analog audio CH3 input headroom	20
COR200	Analog audio CH4 input level	+4
COR201	Analog audio CH4 input headroom	20
COR300	Analog audio CH1 output headroom	20
COR301	Analog audio CH1 output level	+4
COR400	Analog audio CH2 output headroom	20
COR401	Analog audio CH2 output level	+4
COR500	Analog audio CH3 output headroom	20
COR501	Analog audio CH3 output level	+4
COR600	Analog audio CH4 output headroom	20
COR601	Analog audio CH4 output level	+4



APR-13 Board (Side A)

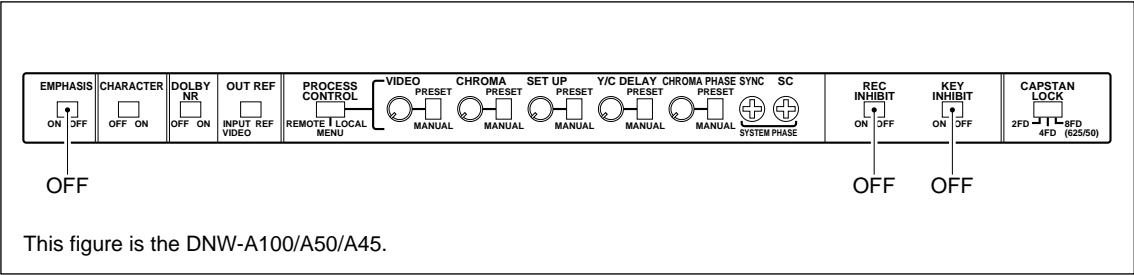
Setting of the DNW

Trun on the power, and set each control panel and connector panel as shown below.



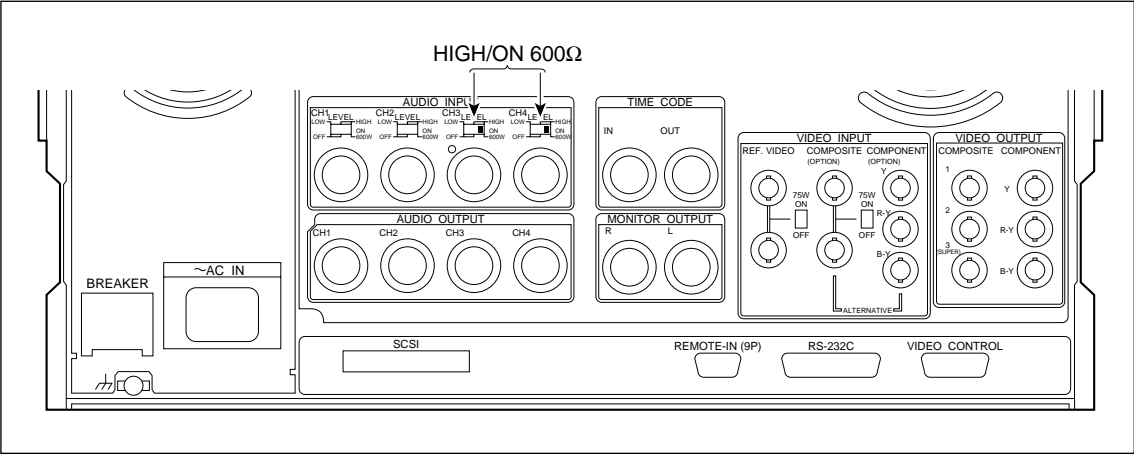
This figure is the DNW-A100/A100P.

Upper/Lower Control Panels



This figure is the DNW-A100/A50/A45.

Sub Control Panel



Connector Panel

Setting of the setup extend menu

None.

## 1. Unity Level Adjustment

### Note

When the optional kit BKNW-105 is equipped in the DNW, "Unity Level Adjustment" is not needed.

Measuring equipment: Audio analyzer  
(dBm mesurumwnt mode, 80 kHz LPF)

### Note

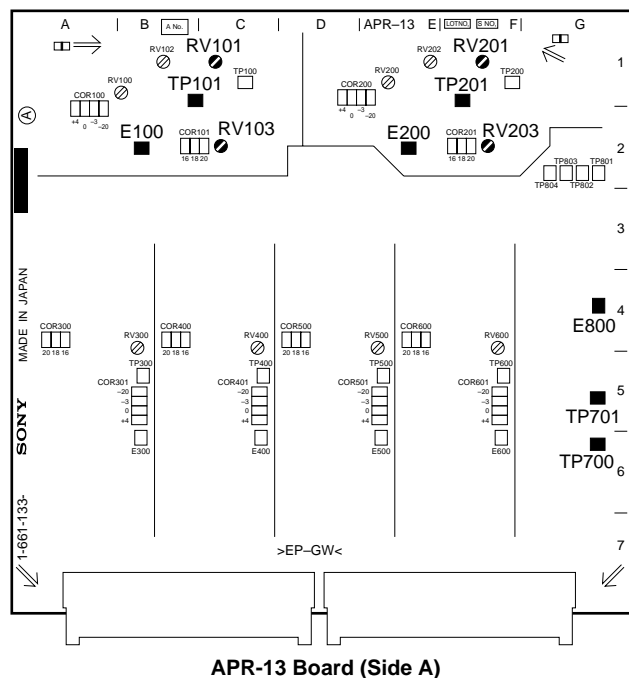
More than 20 minutes should elapse after turning the power on, when this adjustment is performed.

### CH3 adjustment

- Input the audio signal 1 kHz, +4.0 dBm(600  $\Omega$ ) to AUDIO INPUT CH3 connector.
- Connect the input of audio analyzer to AUDIO OUTPUT CH3 connector.
- Perform adjustment.  
Adjustment point:  $\text{RV101/APR-13(C-1)}$   
Specification:  $+4.0 \pm 0.1$  dBm (at 600  $\Omega$  load)

### CH4 adjustment

- Input the audio signal 1 kHz, +4.0 dBm(600  $\Omega$ ) to AUDIO INPUT CH4 connector.
- Connect the input of audio analyzer to AUDIO OUTPUT CH4 connector.
- Perform adjustment.  
Adjustment point:  $\text{RV201/APR-13(F-1)}$   
Specification:  $+4.0 \pm 0.1$  dBm (at 600  $\Omega$  load)



## 2. Offset Level Adjustment

Measuring equipment: Oscilloscope

### Note

More than 20 minutes should elapse after turning the power on, when this adjustment is performed.

- Short-circuit TP101/APR-13(B-1) and E100/APR-13(B-2) with a shorting clip.
- Short-circuit TP201/APR-13(F-1) and E200/APR-13(E-2) with a shorting clip.
- Connect and set the oscilloscope as follows:  
CH-1: TP700/APR-13(G-6), DC 5 V/DIV, 2  $\mu$ s/DIV  
CH-2: TP701/APR-13(G-5), DC 5 V/DIV  
Trigger: CH-2, - slope
- Adjust  $\text{RV103/APR-13(C-2)}$  so that the audio CH3 part of the waveform at TP700 makes the same waveform to the Figure 1 (left side).
- Adjust  $\text{RV203/APR-13(F-2)}$  so that the audio CH4 part of the waveform at TP700 makes the same waveform to the Figure 1 (right side).

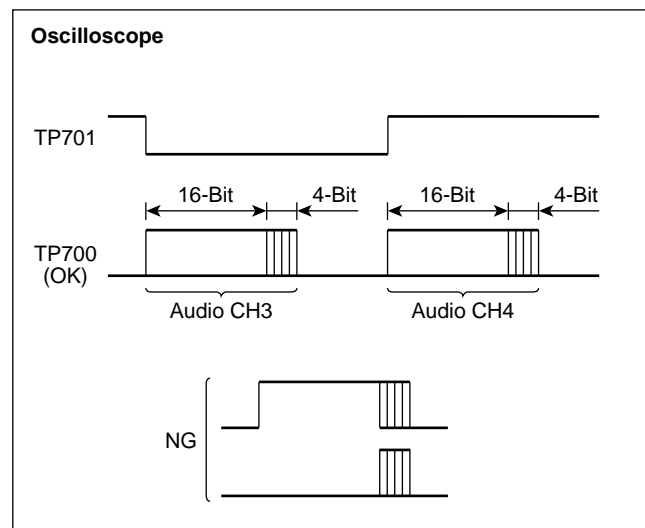


Figure 1. Waveform of CH3/CH4 Offset Level Adjustment

- Disconnect the shorting clips from TP101, TP201, E100, and E200.

## 6-4. DM-89 Board Replacement

The electrical adjustments are essential after the DM-89 board is replaced.

To perform the electrical adjustments, the following equipment and fixtures are required.

### Note

The DM-89 board of the service parts code suffix-A cannot be used to this unit. Some setting data are different according to the board number suffix (XX of 1-648-541-XX) of DM-89 board.

Be sure to check the suffixes of service parts code and board number before replacement. The service parts code is indicated on near the top right corner (G-1) of side A of DM-89 board, and the board number is indicated on the left margin (A-6) of side A.

- Composite video signal generator
  - For DNW-A100/A50/A45: TEKTRONIX TSG-170A or equivalent
  - For DNW-A100P/A50P/A45P: TEKTRONIX TSG-271 or equivalent
- Component waveform monitor: TEKTRONIX WFM300 or equivalent
- Oscilloscope: TEKTRONIX 2465B or equivalent
- Spectrum analyzer: ADVANTEST R3261A or equivalent
- Network analyzer: ANRITSU MS420B or equivalent
- Digital voltmeter: ADVANTEST TR6845 or equivalent
- Composite video monitor
- Extension board: EX-377 (SONY part No. J-6269-810-A)
- 75  $\Omega$  terminators (4 pcs.)
- Shorting clip (1 pc.)
- Cleaning tape: BCT-5CLN (SONY standard products)
- Alignment tapes
  - For DNW-A100/A50/A45: CR5-1B (SONY part No. 8-960-096-41) and CR5-2A (SONY part No. 8-960-097-44)
  - For DNW-A100P/A50P/A45P: CR5-1B PS (SONY part No. 8-960-096-91) and CR5-2A PS (SONY part No. 8-960-098-44)

### 6-4-1. Replacement Procedure

#### Note

Turn off the POWER switch before starting the replacement.

- (1) Remove the upper lid, board retainer (S), and DM-89 (original) board.  
(Refer to “6-1-3. Plug-in Board Pulling out/Insertion”.)
- (2) After inserting the extension board EX-377 to the slot for DM-89 board, and then connect a new DM-89 board to the extension board.
- (3) Clean the video heads once. (Refer to “5-2-1. Cleaning using Cleaning Tape”.)
- (4) Perform the electrical adjustments (Section 6-4-2).
- (5) For DNW-A100/A50/A45 only  
Return the ITEM-709 and ITEM-713 of setup extend menu to previous settings after the electrical adjustments are completed.
- (6) Return the states of S1100-1 on the SS-63 board and control panels to their previous states.
- (7) Turn off the power, and wait for 30 seconds.
- (8) Remove the adjusted DM-89 board from the extension board, then pull out the extension board.
- (9) Reattach the board retainer (S) and upper lid after inserting the adjusted DM-89 board.  
(Refer to “6-1-3. Plug-in Board Pulling out/Insertion”.)

## 6-4-2. Electrical Adjustments

### Adjustment Items

No.	Item	Adjustment point	Remarks
0	Preparation		
1	Initial data setting	All data of A3 : BETACAM PB ADJUST	
2	EQ RF output level adjustment		
	METAL Y	A30 : EQ VR : RF GAIN METAL-Y-A A30 : EQ VR : RF GAIN METAL-Y-B	TP100/DM-89
	METAL C	A30 : EQ VR : RF GAIN METAL-C-A A30 : EQ VR : RF GAIN METAL-C-B	TP300/DM-89
	OXIDE C	A30 : EQ VR : RF GAIN OXIDE-C-A A30 : EQ VR : RF GAIN OXIDE-C-B	TP300/DM-89
	OXIDE Y	A30 : EQ VR : RF GAIN OXIDE-Y-A A30 : EQ VR : RF GAIN OXIDE-Y-B	TP100/DM-89
	Data save	A3F : NV-RAM CONTROL	
3	Cosine equalizer adjustment		
	METAL Y	Group delay $\text{RV101/DM-89, RV102/DM-89}$	TP104/DM-89
	Main	A33 : DM VR 2 : MAIN METAL-Y-A A33 : DM VR 2 : MAIN METAL-Y-B	TP3/DM-89
	Sub	A34 : DM VR 3 : SUB METAL-Y-A A34 : DM VR 3 : SUB METAL-Y-B	DNW-A100/A50/A45: Set the data to AF DNW-A100P/A50P/A45P: TP2/DM-89
	METAL C	Group delay $\text{RV301/DM-89, RV302/DM-89}$	TP304/DM-89
	Main	A33 : DM VR 2 : MAIN METAL-C-A A33 : DM VR 2 : MAIN METAL-C-B	TP7/DM-89
	Sub	A34 : DM VR 3 : SUB METAL-C-A A34 : DM VR 3 : SUB METAL-C-B	DNW-A100/A50/A45: Set the data to 70 DNW-A100P/A50P/A45P: TP6/DM-89
	OXIDE C	Group delay $\text{RV303/DM-89, RV304/DM-89}$	TP304/DM-89
	Main	A33 : DM VR 2 : MAIN OXIDE-C-A A33 : DM VR 2 : MAIN OXIDE-C-B	TP7/DM-89
	Sub	A34 : DM VR 3 : SUB OXIDE-C-A A34 : DM VR 3 : SUB OXIDE-C-B	TP6/DM-89
	OXIDE Y	Group delay $\text{RV104/DM-89, RV103/DM-89}$ (RV103 is not equipped on the DM-89 board of LOT Nos. 407 and higher.)	TP104/DM-89
	Main	A33 : DM VR 2 : MAIN OXIDE-Y-A A33 : DM VR 2 : MAIN OXIDE-Y-B	TP3/DM-89
	Sub	A34 : DM VR 3 : SUB OXIDE-Y-A A34 : DM VR 3 : SUB OXIDE-Y-B	TP2/DM-89
	OMC DC offset	A35 : DM VR 4 : OMC DC METAL-Y A35 : DM VR 4 : OMC DC METAL-C A35 : DM VR 4 : OMC DC OXIDE-Y A35 : DM VR 4 : OMC DC OXIDE-C	Set the data to E4 Set the data to D0
	Data Save	A3F : NV-RAM CONTROL	
4	Cosine equalizer provisional adjustment		
	<b>Note</b> This provisional adjustment explains how to adjust without using the network analyzer as opposed to adjustment (No. 3) using the network analyzer. Perform this provisional adjustment only when the network analyzer is not available for an urgent maintenance. Be sure to perform the adjustment (No. 3) using the network analyzer at a later date.		



(Continued)

No.	Item	Adjustment point	Remarks
5	DM RF output level rough adjustment		
	METAL Y	RV211/DM-89	TP3/DM-89
	METAL C	RV406/DM-89	TP7/DM-89
	OXIDE C	RV407/DM-89	TP7/DM-89
	OXIDE Y	RV212/DM-89	TP3/DM-89
6	OMC carrier balance adjustment		
	OXIDE Y	RV107/DM-89, RV108/DM-89	TP105/DM-89
	OXIDE C	RV307/DM-89, RV308/DM-89	TP305/DM-89
	METAL C	RV305/DM-89, RV306/DM-89	TP305/DM-89
	METAL Y	RV105/DM-89, RV106/DM-89	TP105/DM-89
7	OMC carrier balance provisional adjustment		
	<div> Note </div> <p>This provisional adjustment explains how to adjust without using the spectrum analyzer as opposed to adjustment (No. 6) using the spectrum analyzer. Perform this provisional adjustment only when the network analyzer is not available for an urgent maintenance. Be sure to perform the adjustment (No. 6) using the network analyzer at a later date.</p>		
8	Demodulator limiter balance adjustment		
	Y	RV502/DM-89	TP501/DM-89
	C	RV702/DM-89	TP8/DM-89
9	Non-liner output level adjustment		
	METAL Y	RV503/DM-89	TP505/DM-89
	METAL C	RV703/DM-89	TP705/DM-89 (For DNW-A100P/A50P/A45P)
	C	RV704/DM-89	TP705/DM-89 (For DNW-A100/A50/A45)
	OXIDE C	RV704/DM-89	TP705/DM-89 (DNW-A100P/A50P/A45P only)
	OXIDE Y	RV504/DM-89	TP505/DM-89
10	PB frequency response adjustment		
	METAL Y	A32 : DM VR 1 : EQ1 METAL-Y-A A32 : DM VR 1 : EQ1 METAL-Y-B	VIDEO OUTPUT COMPONENT Y
	METAL C	A32 : DM VR 1 : EQ1 METAL-C-A A32 : DM VR 1 : EQ1 METAL-C-B	VIDEO OUTPUT COMPONENT R-Y/B-Y
	OXIDE Y	A32 : DM VR 1 : EQ1 OXIDE-Y-A A32 : DM VR 1 : EQ1 OXIDE-Y-B	VIDEO OUTPUT COMPONENT Y
	OXIDE C	A32 : DM VR 1 : EQ1 OXIDE-C-A A32 : DM VR 1 : EQ1 OXIDE-C-B	VIDEO OUTPUT COMPONENT R-Y/B-Y
	Data save	A3F : NV-RAM CONTROL	
11	Drop-out compensation equalizer adjustment		
	METAL Y	RV201/DM-89	TP203/DM-89
	METAL C	RV401/DM-89	TP403/DM-89
	OXIDE Y	RV202/DM-89	RV202/DM-89
	OXIDE C	RV402/DM-89	RV402/DM-89
12	DM RF output level adjustment		
	METAL Y	RV211/DM-89	TP3/DM-89
	METAL C	RV406/DM-89	TP7/DM-89
	OXIDE C	RV407/DM-89	TP7/DM-89
	OXIDE Y	RV212/DM-89	TP3/DM-89

(Continue)

(Continued)

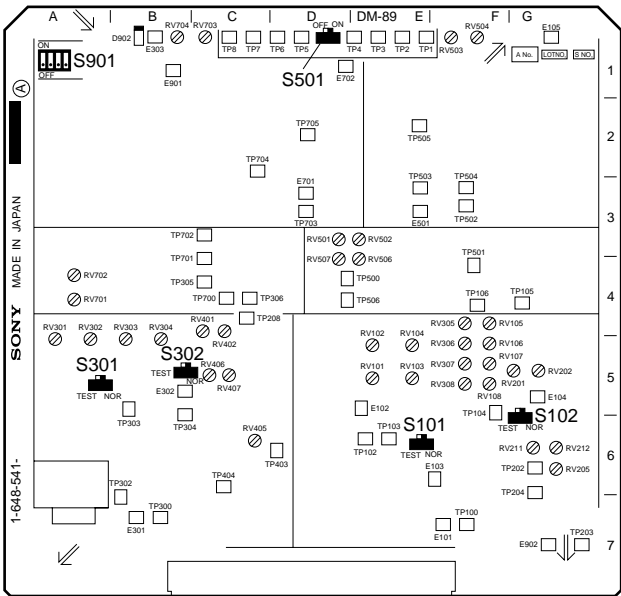
No.	Item	Adjustment point	Remarks
13	RF envelope adjustment		
	Y	RV205/DM-89	TP203/DM-89
	C	RV405/DM-89	TP403/DM-89
	TH H level	A36 : DM VR 5 : ENV-TH-H	Set the data to 20
	TH L level	A36 : DM VR 5 : ENV-TH-L	Set the data to 10
	Data save	A3F : NV-RAM CONTROL	
14	DM search picture adjustment		
	Offset	RV506/DM-89	TP500/DM-89
	Y	RV501/DM-89	TP502/DM-89
	C	RV701/DM-89	TP702/DM-89
	Gain	RV507/DM-89	TP1/DM-89
15	Guard band width adjustment		
	METAL	A35 : DM VR 4 : GUARD BAND METAL-Y A35 : DM VR 4 : GUARD BAND METAL-C	
	OXIDE	A35 : DM VR 4 : GUARD BAND OXIDE-Y A35 : DM VR 4 : GUARD BAND OXIDE-C	
	Data save	A3F : NV-RAM CONTROL	
16	Component output level adjustment		
	METAL Y	RV101/TBC-24	VIDEO OUTPUT COMPONENT Y
	METAL C	RV201/TBC-24	VIDEO OUTPUT COMPONENT R-Y/B-Y
	OXIDE Y	RV504/DM-89	VIDEO OUTPUT COMPONENT Y
	OXIDE C	RV704/DM-89	VIDEO OUTPUT COMPONENT R-Y/B-Y (DNW-A100P/A50P/A45P only)

## 0. Preparation

### Setting (Check) of the switches on the DM-89 board

Confirm that the switches are factory settings.

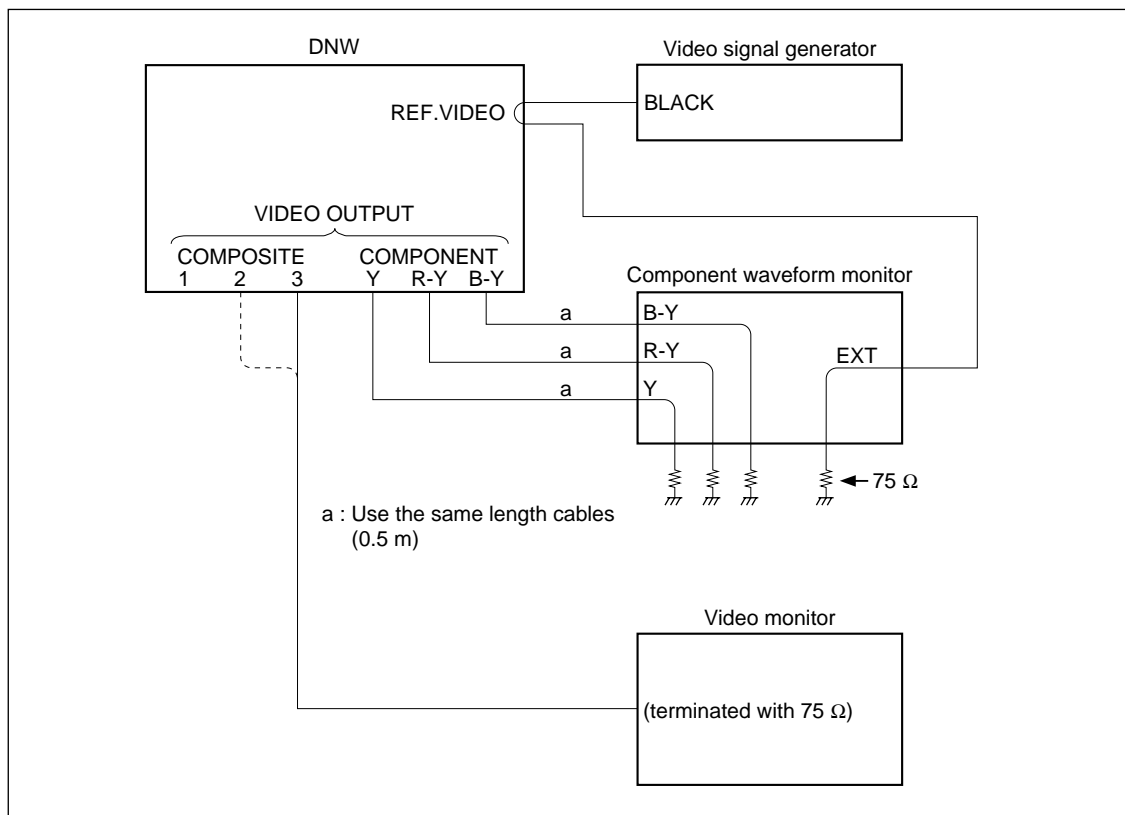
Ref. No.	Factory setting
S101	NORMAL POSITION (right side)
S102	NORMAL POSITION (right side)
S301	NORMAL POSITION (right side)
S302	NORMAL POSITION (right side)
S501	ON (right side)
S901	1 OFF (down side)
	2 OFF (down side)
	3 OFF (down side)
	4 OFF (down side)



DM-89 Board (Side A)

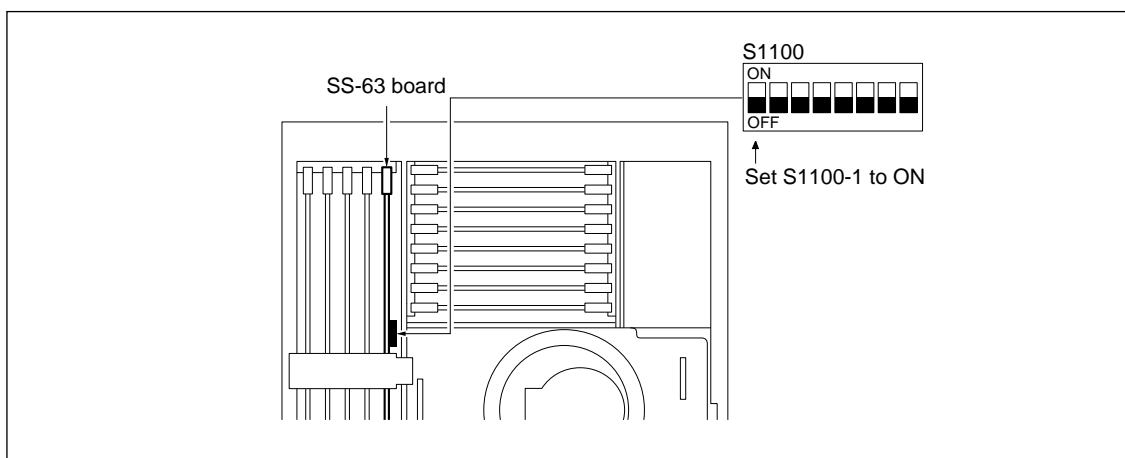
## Connection

Connect the video signal generator, component waveform monitor, and video monitor as shown below.



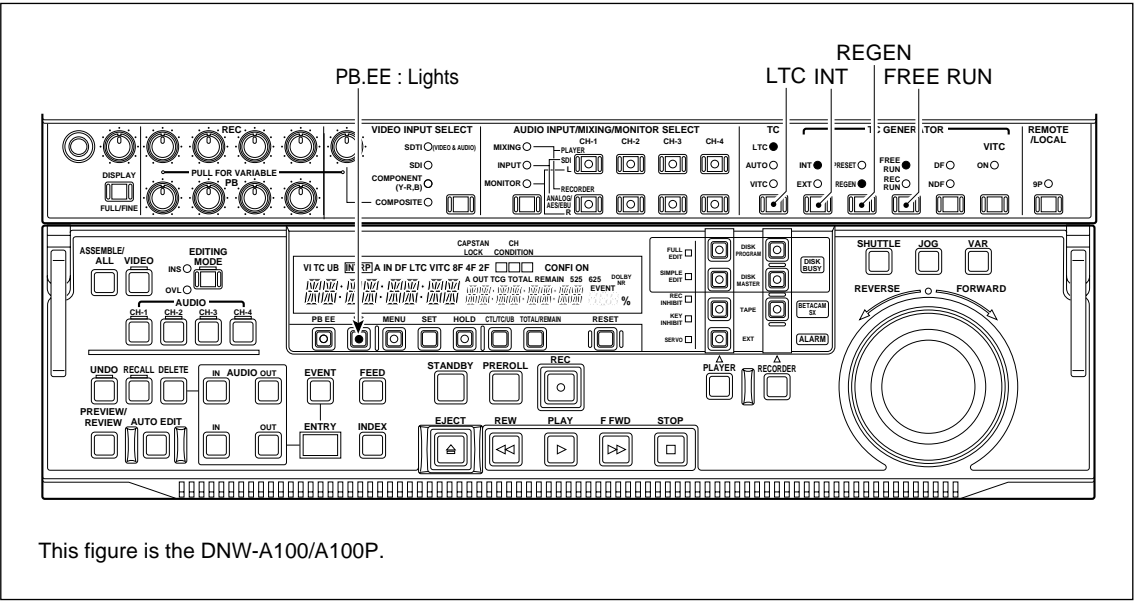
## Setting of DNW

(1) Set S1100-1 on SS-63 board to ON to treat the extended menu of the setup menu.

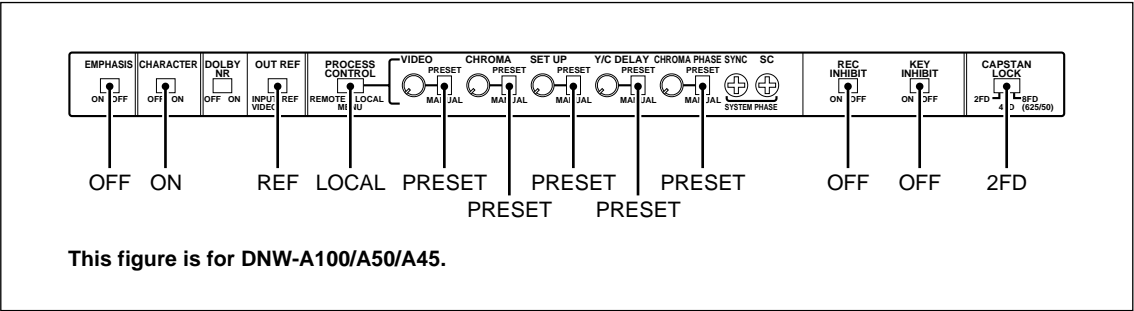


**S1100 of SS-63 Board**

(2) Turn on the power, and set each control panel as shown below.



Upper/Lower Control Panels



Sub Control Panel

(3) Setting of the setup extend menu

- For DNW-A100/A50/A45  
Set the SUB-ITEMs of ITEM-709 and ITEM-713 as shown below.  
After adjustments are completed, return the SUB-ITEMs to their previous settings.

ITEM	SUB-ITEM	Setting	Previous setting (fill up)
709 : CAV LEVEL FORMAT	1. OUTPUT CAV LEVEL	B-CAM	
713 : VIDEO SETUP REFERENCE LEVEL	0. MASTER LEVEL	0.0%	
	3. BETACAM PB LEVEL	MSTER	
	4. OUTPUT LEVEL	MSTER	

- For DNW-A100P/A50P/A45P  
None.

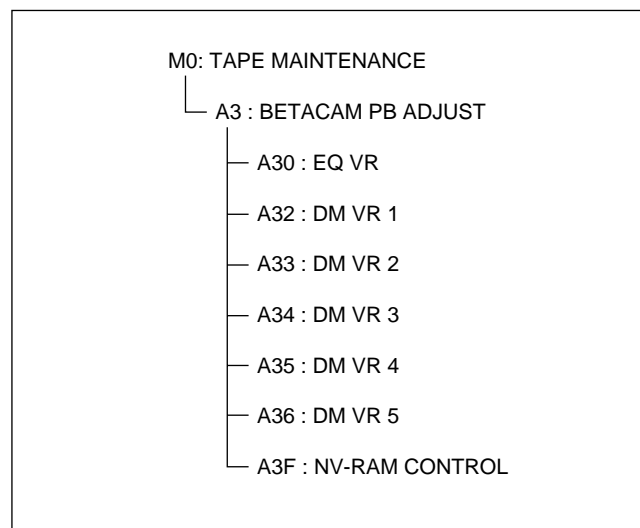
## (4) Entering the maintenance mode

To enter the maintenance mode, press S1101 on the SS-63 board.

**Notes**

The operation of the maintenance mode is described as follows:

The sub mode and menus of the maintenance mode that are used after replacing the DM-89 board are as shown below.

• **Shifting to the next menu**

- (1) Press the JOG button once to enter the JOG mode.
- (2) To set the cursor (\* mark) to the desired menu (mode), turn the search dial.
- (3) Press the SET button once.

• **Exiting form the current menu (mode)**

Press the MENU button once.

**Note**

To exit from the maintenance mode, press the MENU button several times.

• **Changing the data value**

- (1) To set the cursor (\* mark) to the item, turn the search dial.
- (2) Turn the search dial slowly while pressing the JOG button. = **Data value changes.**  
 REVERSE direction: the data value decreases (FF follows 00)  
 FORWARD direction: the data value increases (00 follows FF)

**Note**

During adjustment, change the rotational direction of the search dial watching to the change of waveform that is displayed on the measuring equipment.

• **Saving the data**

- (1) To set the cursor (\* mark) to A3F : NV-RAM CONTROL, turn the search dial.
- (2) Press the SET button once.
- (3) To set the cursor (\* mark) to "SAVE ALL ADJUST DATA", turn the search dial.
- (4) Press the SET button once.

• **Tape operations (playback, rewind, forward, etc.) in the maintenance mode**

- (1) Enter any menu of A30 to A36.
- (2) To pause the maintenance mode operation, press the SET button. = **It enables tape operation.**

**Note**

The display of the time data display area on the lower control panel is changed to the time code display in the normal operation mode, and a white square mark is displayed at the top right corner of menu screen on the video monitor.

- (3) After the tape operation is completed, press the MENU button to cancel the pause of maintenance mode.

**Note**

The display of the time data display area and video monitor are returned to their previous states.

## 1. Initial Data Setting

- (1) Enter A3 : BETACAM PB ADJUST of the maintenance mode.
- (2) Enter A30 : EQ VR.
- (3) Set the specified data to all items of A30 : EQ VR.  
(For setting data, refer to the table below.)
- (4) To exit A30 : EQ VR, press the MENU button once.
- (5) Enter A32 : DM VR 1.
- (6) Set the specified data to all items of A32 : DM VR 1.  
(For setting data, refer to the table below.)
- (7) To exit A32 : DM VR 1, press the MENU button once.
- (8) Enter A33 : DM VR 2.
- (9) Set the specified data to all items of A33 : DM VR 2.  
(For setting data, refer to the table below.)
- (10) To exit A33 : DM VR 2, press the MENU button once.

Item of A3 :BETACAM ADJUST		Setting data for DNW-A100/A50/A45	Setting data for DNW-A100P/A50P/A45P
A30 : EQ VR	RF GAIN METAL-Y-A	55	8E
	RF GAIN METAL-Y-B	55	8E
	RF GAIN METAL-C-A	3F	6C
	RF GAIN METAL-C-B	3F	6C
	RF GAIN OXIDE-Y-A	72	9C
	RF GAIN OXIDE-Y-B	72	9C
	RF GAIN OXIDE-C-A	5A	81
	RF GAIN OXIDE-C-B	5A	81
A32 : DM VR 1	EQ1 METAL-Y-A	79	80
	EQ1 METAL-Y-B	79	80
	EQ1 METAL-C-A	7C	90
	EQ1 METAL-C-B	7C	90
	EQ1 OXIDE-Y-A	A6	A1
	EQ1 OXIDE-Y-B	A6	A1
	EQ1 OXIDE-C-A	90	AD
	EQ1 OXIDE-C-B	90	AD
A33 : DM VR 2	MAIN METAL-Y-A	CD	B7
	MAIN METAL-Y-B	CD	B7
	MAIN METAL-C-A	8E	8D
	MAIN METAL-C-B	8E	8D
	MAIN OXIDE-Y-A	A6	A8
	MAIN OXIDE-Y-B	A6	A8
	MAIN OXIDE-C-A	9E	9E
	MAIN OXIDE-C-B	9E	9E

- (11) Enter A34 : DM VR 3.  
 (12) Set the specified data to all items of A34 : DM VR 3.  
 (For setting data, refer to the table below.)  
 (13) To exit A34 : DM VR 3, press the MENU button once.  
 (14) Enter A35 : DM VR 4.  
 (15) Set the specified data to all items of A35 : DM VR 4.  
 (For setting data, refer to the table below.)

**Note**

Some setting data are different according to the board number suffix (XX of 1-648-541-XX) of DM-89 board.

- (16) To exit A35 : DM VR 4, press the MENU button once.  
 (17) Enter A36 : DM VR 5.  
 (18) Set the specified data to all items of A36 : DM VR 5.  
 (For setting data, refer to the table below.)  
 (19) To exit A36 : DM VR 5, press the MENU button once.  
 (20) Enter A3F : NV-RAM CONTROL of the maintenance mode.  
 (21) Execute "SAVE ALL ADJUST DATA".  
 (22) Check that the message "Save Complete" is displayed on the video monitor.  
 (23) To exit A3F : NV-RAM CONTROL, press the MENU button once.

Item of A3 :BETACAM ADJUST		Setting data for DNW-A100/A50/A45	Setting data for DNW-A100P/A50P/A45P
A34 : DM VR 3	SUB METAL-Y-A	AF	B2
	SUB METAL-Y-B	AF	B2
	SUB METAL-C-A	70	91
	SUB METAL-C-B	70	91
	SUB OXIDE-Y-A	B2	BB
	SUB OXIDE-Y-B	B2	BB
	SUB OXIDE-C-A	A7	A8
	SUB OXIDE-C-B	A7	A8
A35 : DM VR 4	GUARD BAND METAL-Y	1D (suffix-13 only: 38)	27 (suffix-13 only: 29)
	GUARD BAND METAL-C	1C (suffix-13 only: 21)	23 (suffix-13 only: 16)
	GUARD BAND OXIDE-Y	32 (suffix-13 only: 48)	2F (suffix-13 only: 3B)
	GUARD BAND OXIDE-C	31 (suffix-13 only: 30)	29 (suffix-13 only: 16)
	OMC DC METAL-Y	E4	E4
	OMC DC METAL-C	D0	D0
	OMC DC OXIDE-Y	D0	D0
	OMC DC OXIDE-C	D0	D0
A36 : DM VR 5	DO TH METAL-Y	15	1E
	DO TH METAL-C	14	1D
	DO TH OXIDE-Y	2A	2A
	DO TH OXIDE-C	28	28
	ENV-TH-H	20	20
	ENV-TH-L	10	10

## 2. EQ RF Output Level Adjustment

### Note

Wait for more than 20 minutes after turning on the power, then perform the adjustments.

Measuring equipment: Oscilloscope (Band width limit: ON)

(1) Enter A30 : EQ VR of the maintenance mode.

(2) Connect and set the oscilloscope as follows:

CH-1: TP100/DM-89(F-7), AC 100 mV/DIV, 2 ms/DIV, GND: E101/DM-89(F-7)

Trigger: TP4/DM-89(E-1), DC 1 V/DIV, GND: E702/DM-89(D-1)

(3) METAL Y adjustment

Playback the flat field signal portion (24:00 to 26:00) of the alignment tape CR5-1B or CR5-1B PS, and perform the adjustment. (DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)

### Note

Adjust respectively for Y-A and Y-B channels.

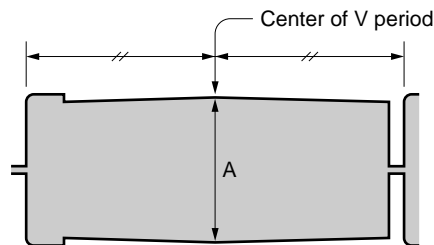
When watching the Y-A channel, set the trigger of oscilloscope to – slope.

When watching the Y-B channel, set to + slope.

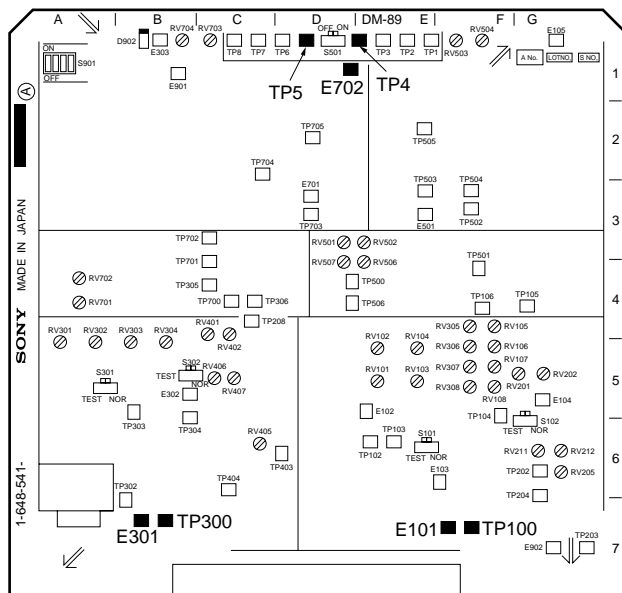
Adjustment points: Y-A channel: A30 : EQ VR : RF GAIN METAL-Y-A

Y-B channel: A30 : EQ VR : RF GAIN METAL-Y-B

Specifications (Y-A and Y-B channels):  $A = 380 \pm 20$  mV p-p



(4) Stop the playback of the alignment tape CR5-1B/CR5-1B PS.



DM-89 Board (Side A)



- (5) Change the connection of the oscilloscope as follows:

CH-1: TP300/DM-89(B-7), GND: E301/DM-89(B-7)

Trigger: TP5/DM-89(D-1), GND: E702/DM-89(D-1)

- (6) METAL C adjustment

Playback the flat field signal portion (24:00 to 26:00) of the alignment tape CR5-1B or CR5-1B PS, and perform the adjustment. (DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)

**Note**

Adjust respectively for C-A and C-B channels.

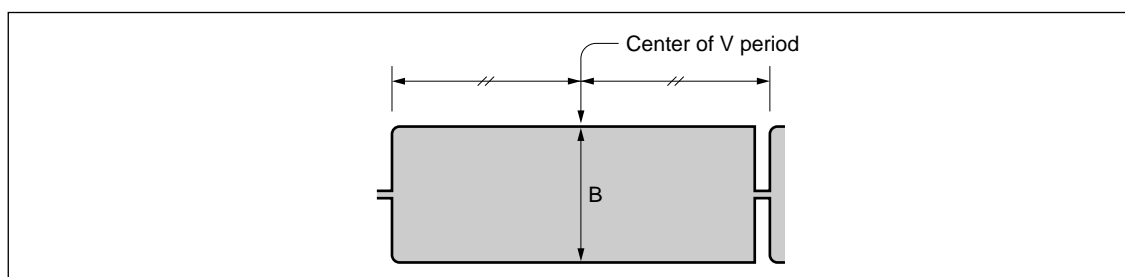
When watching the C-A channel, set the trigger of oscilloscope to  $-$  slope.

When watching the C-B channel, set to  $+$  slope.

Adjustment points: C-A channel: A30 : EQ VR : RF GAIN METAL-C-A

C-B channel: A30 : EQ VR : RF GAIN METAL-C-B

Specifications (C-A and C-B channels):  $B = 380 \pm 20$  mV p-p



- (7) Eject the alignment tape CR5-1B/CR5-1B PS.

- (8) OXIDE C adjustment

Playback the 75% color-bar signal portion (0:00 to 3:00) of the alignment tape CR5-2A or CR5-2A PS, and perform the adjustment.

(DNW-A100/A50/A45: CR5-2A, DNW-A100P/A50P/A45P: CR5-2A PS)

**Note**

Adjust respectively for C-A and C-B channels.

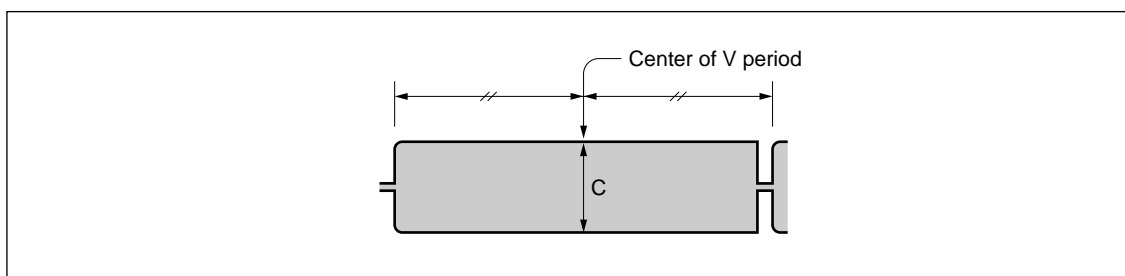
When watching the C-A channel, set the trigger of oscilloscope to  $-$  slope.

When watching the C-B channel, set to  $+$  slope.

Adjustment points: C-A channel: A30 : EQ VR : RF GAIN OXIDE-C-A

C-B channel: A30 : EQ VR : RF GAIN OXIDE-C-B

Specifications (C-A and C-B channels):  $C = 250 \pm 20$  mV p-p



- (9) Stop the playback of the alignment tape CR5-2A/CR5-2A PS.

- (10) Change the connection of the oscilloscope as follows:

CH-1: TP100/DM-89(F-7), GND: E101/DM-89(F-7)

Trigger: TP4/DM-89(E-1), GND: E702/DM-89(D-1)

(11) OXIDE Y adjustment

Playback the 75% color-bar signal portion (0:00 to 3:00) of the alignment tape CR5-2A or CR5-2A PS, and perform the adjustment.

(DNW-A100/A50/A45: CR5-2A, DNW-A100P/A50P/A45P: CR5-2A PS)

**Note**

Adjust respectively for Y-A and Y-B channels.

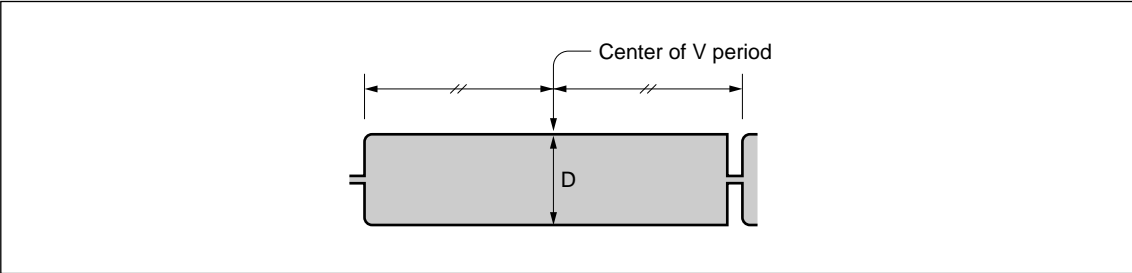
When watching the Y-A channel, set the trigger of oscilloscope to  $-$  slope.

When watching the Y-A channel, set to  $+$  slope.

Adjustment points: Y-A channel: A30 : EQ VR : RF GAIN OXIDE-Y-A

Y-B channel: A30 : EQ VR : RF GAIN OXIDE-Y-B

Specifications (Y-A and Y-B channels):  $D = 250 \pm 20$  mV p-p



(12) Eject the alignment tape CR5-2A/CR5-2A PS.

(13) To exit A30 : EQ VR, press the MENU button once on the lower control panel.

(14) Data save

Enter A3F : NV-RAM CONTROL of the maintenance mode, then execute “SAVE ALL ADJUST DATA”.

(15) Check that the message “Save Complete” is displayed on the video monitor.

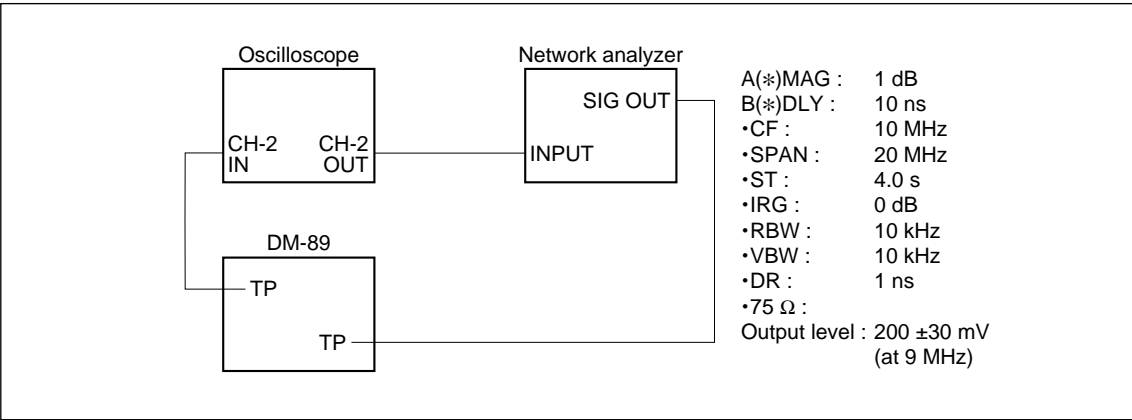
(16) To exit A3F : NV-RAM CONTROL, press the MENU button once.

**3. Cosine Equalizer Adjustment**

**Note**

If the network analyzer is not available, perform “4. Cosine Equalizer Provisional Adjustment”.

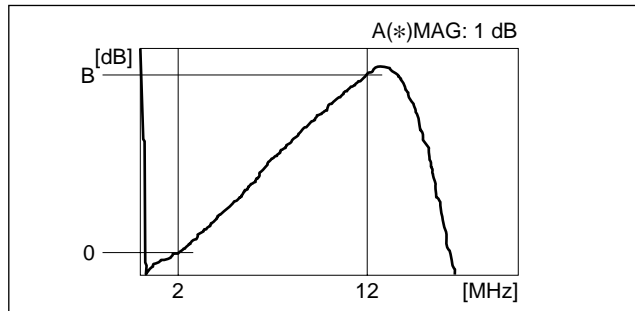
Measuring equipment: Network analyzer and Oscilloscope (Refer to next figure.)



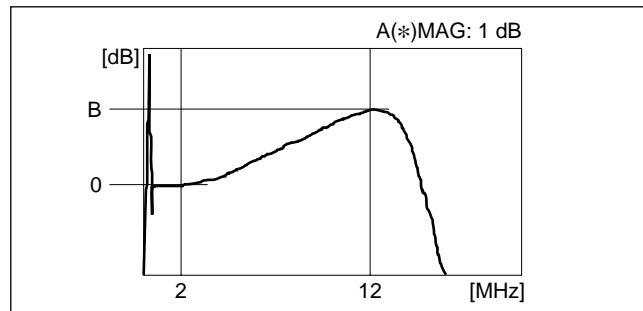
Connection and Setting of Network Analyzer



- (9) Enter A33 : DM VR 2 of the maintenance mode.
- (10) Connect the oscilloscope's CH-2 to TP3/DM-89(E-1). GND: E702/DM-89(D-1)
- (11) METAL Y, Main adjustment
- (i) Adjust the level difference at 12 MHz use 2 MHz as the reference.
- Adjustment point: A33 : DM VR 2 : MAIN METAL-Y-A
- Specification: DNW-A100/A50/A45: B =  $+8.0 \pm 0.5$  dB
- DNW-A100P/A50P/A45P: B =  $+3.5 \pm 0.5$  dB



DNW-A100/A50/A45



DNW-A100P/A50P/A45P

- (ii) Set the data value of A33 : DM VR 2 : MAIN METAL-Y-B to the identical data value as MAIN METAL-Y-A.
- (12) To exit A33 : DM VR 2, press the MENU button once.
- (13) Enter A34 : DM VR 3 of the maintenance mode.
- (14) METAL Y, Sub adjustment

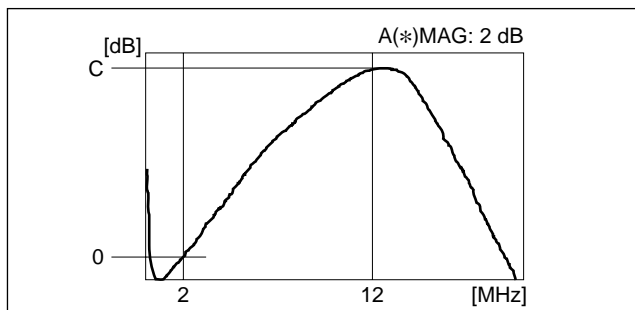
**For DNW-A100/A50/A45**

Confirm that the data value of A34 : DM VR 3 : SUB METAL-Y-A and SUB METAL-Y-B are AF.

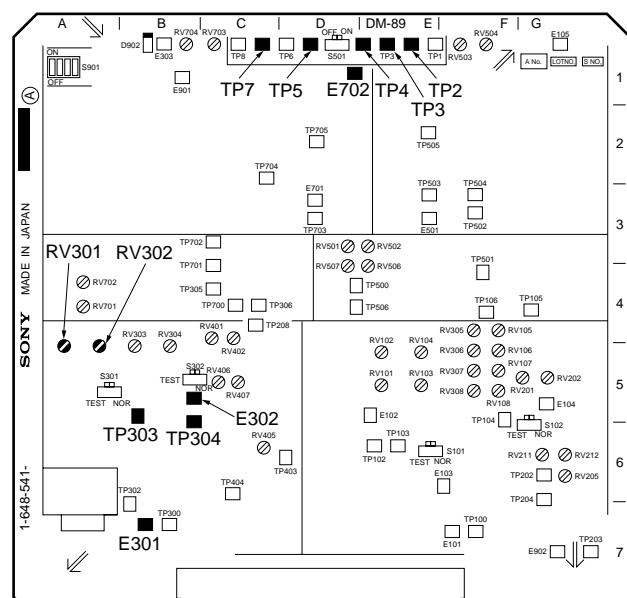
If not, set them to AF.

**For DNW-A100P/A50P/A45P**

- (i) Connect the oscilloscope's CH-2 to TP2/DM-89(E-1). GND: E702/DM-89(D-1)
- (ii) Adjust the level difference at 12 MHz use 2 MHz as the reference.
- Adjustment point: A34 : DM VR 3 : SUB METAL-Y-A
- Specification: C =  $+16.5 \pm 1.0$  dB



- (iii) Set the data value of A34 : DM VR 3 : SUB METAL-Y-B to the identical data value as SUB METAL-Y-A.
- (15) To exit A34 : DM VR 3, press the MENU button once.
- (16) Disconnect the shorting clip from TP4/DM-89(E-1).



DM-89 Board (Side A)

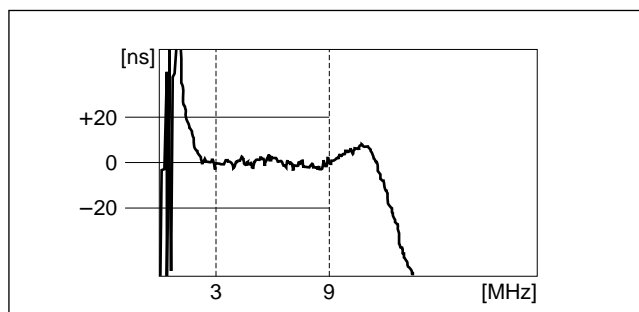
**METAL C adjustment [to step (28)]**

- (17) Short-circuit TP5/DM-89(D-1) and E702/DM-89(D-1) with a shorting clip.  
 (18) Connect the output of network analyzer to TP303/DM-89(B-5). GND: E301/DM-89(B-7)  
 (19) Connect the oscilloscope's CH-2 to TP304/DM-89(B-5). GND: E302/DM-89(B-5)  
 (20) METAL C, Group delay adjustment

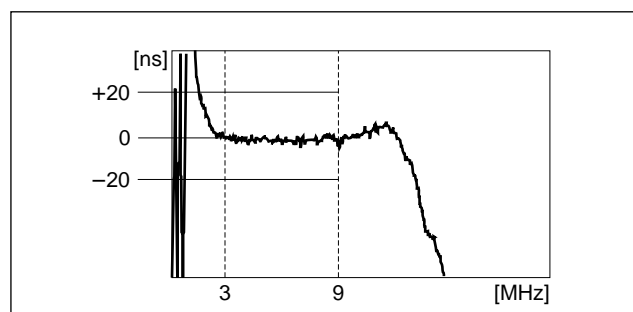
Adjust the group delay time in 3 MHz through 9 MHz.

Adjustment points: ●RV301/DM-89(A-5) and ●RV302/DM-89(A-5)

Specification:  $0 \pm 20$  ns



DNW-A100/A50/A45



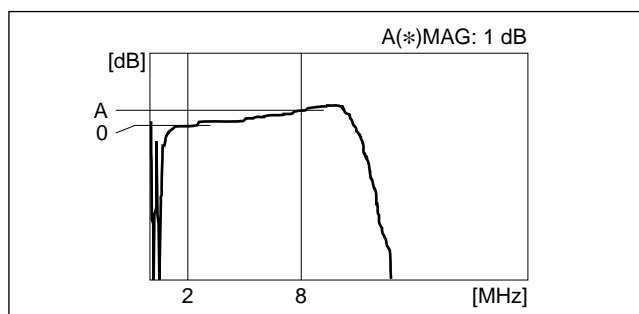
DNW-A100P/A50P/A45P

- (21) Connect the oscilloscope's CH-2 to TP7/DM-89(C-1). GND: E702/DM-89(D-1)  
 (22) Enter A33 : DM VR 2 of the maintenance mode.  
 (23) METAL C, Main adjustment

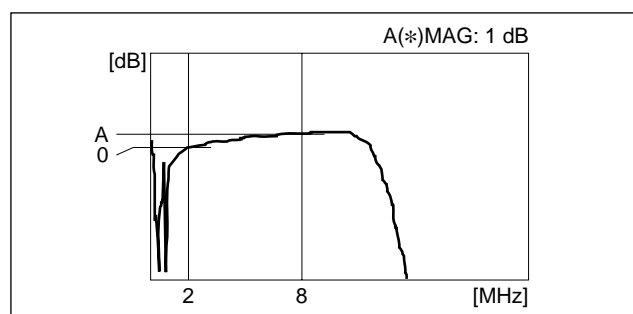
- (i) Adjust the level difference at 8 MHz use 2 MHz as the reference.

Adjustment point: A33 : DM VR 2 : MAIN METAL-C-A

Specification:  $A = +0.5 \pm 0.5$  dB



DNW-A100/A50/A45



DNW-A100P/A50P/A45P

- (ii) Set the data value of A33 : DM VR 2 : MAIN METAL-C-B to the identical data value as MAIN METAL-C-A.  
 (24) To exit A33 : DM VR 2, press the MENU button once.

(25) Enter A34 : DM VR 3 of the maintenance mode.

(26) METAL C, Sub adjustment

**For DNW-A100/A50/A45**

Conform that the data value of A34 : DM VR 3 : SUB METAL-C-A and SUB METAL-C-B are 70.

If not, set them to 70.

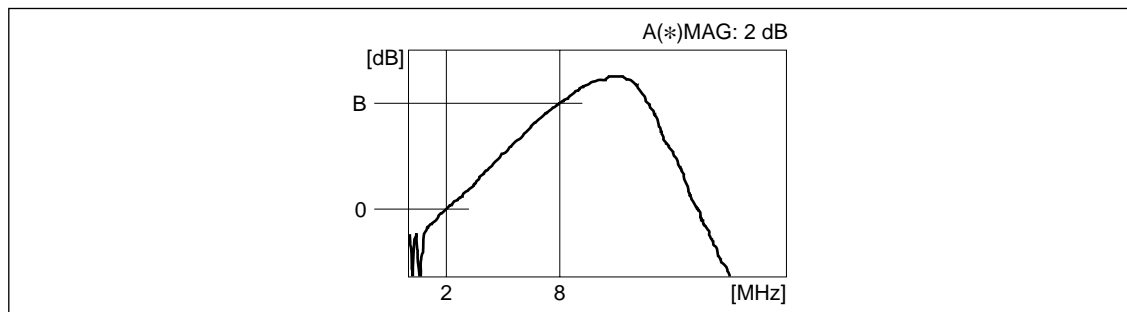
**For DNW-A100P/A50P/A45P**

(i) Connect the oscilloscope's CH-2 to TP6/DM-89(D-1). GND : E702/DM-89(D-1)

(ii) Adjust the level difference at 8 MHz use 2 MHz as the reference.

Adjustment point: A34 : DM VR 3 : SUB METAL-C-A

Specification:  $B = +9.2 \pm 1.0 \text{ dB}$



(iii) Set the data value of A34 : DM VR 3 : SUB METAL-C-B to the identical data value as SUB METAL-C-A.

(27) Eject the alignment tape CR5-1B/CR5-1B PS.

(28) To exit A34 : DM VR 3, press the MENU button once.

**OXIDE C adjustment [to step (41)]**

(29) Insert the alignment tape CR5-2A or CR5-2A PS. (STANDBY OFF mode)

(DNW-A100/A50/A45: CR5-2A, DNW-A100P/A50P/A45P: CR5-2A PS)

(30) Connect the output of network analyzer to TP303/DM-89(B-5). GND: E301/DM-89(B-7)

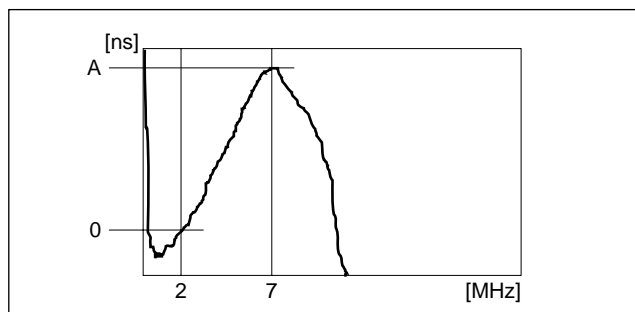
(31) Connect the oscilloscope's CH-2 to TP304/DM-89(B-5). GND: E302/DM-89(B-5)

(32) OXIDE C, Group delay adjustment

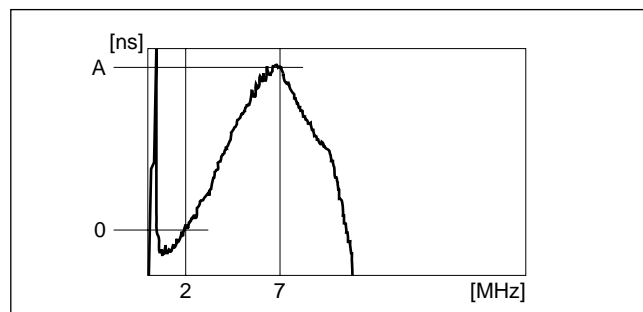
Adjust the delay time at 7 MHz use 2 MHz as the reference.

Adjustment points: ●RV303/DM-89(B-5) and ●RV304/DM-89(B-5)

Specification:  $A = 70 \pm 5 \text{ ns}$

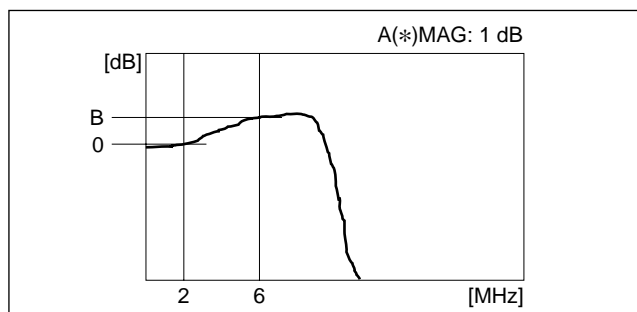


**DNW-A100/A50/A45**

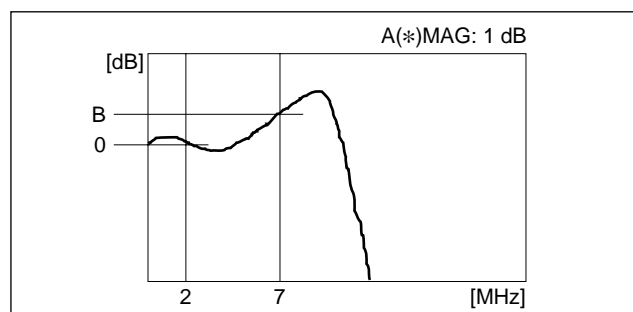


**DNW-A100P/A50P/A45P**

- (33) Connect the oscilloscope's CH-2 to TP7/DM-89(C-1). GND: E702/DM-89(D-1)
- (34) Enter A33 : DM VR 2 of the maintenance mode.
- (35) OXIDE C, Main adjustment
  - (i) Adjust the level difference at 6 MHz or 7 MHz use 2 MHz as the reference.  
(DNW-A100/A50/A45: 6 MHz, DNW-A100P/A50P/A45P: 7 MHz)  
Adjustment point: A33 : DM VR 2 : MAIN OXIDE-C-A  
Specification: B =  $+1.2 \pm 0.5$  dB

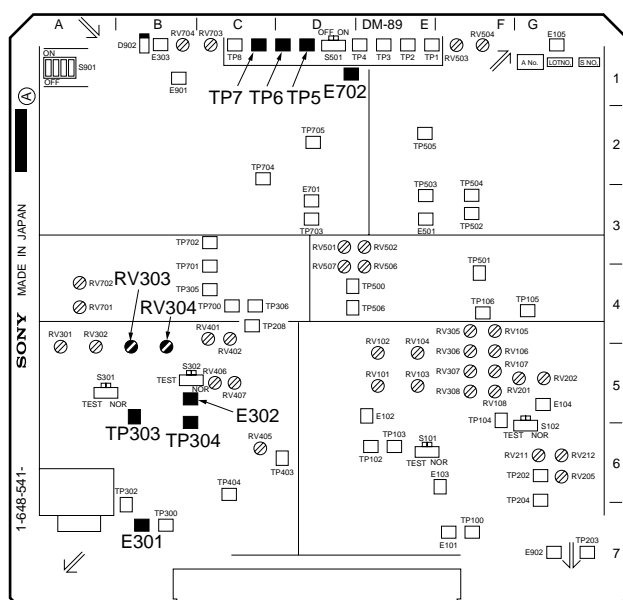


**DNW-A100/A50/A45**



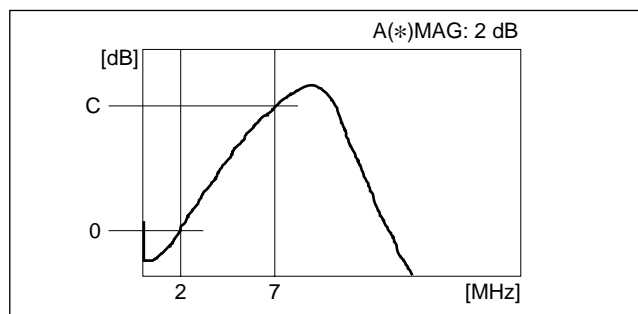
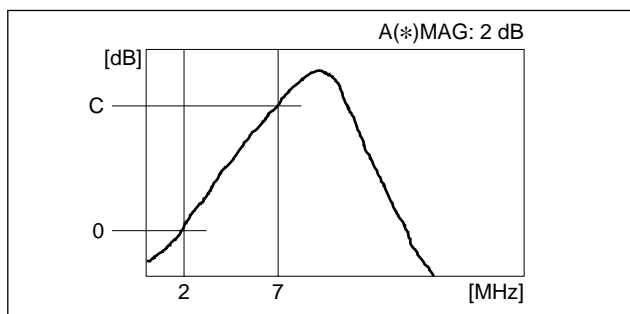
**DNW-A100P/A50P/A45P**

- (ii) Set the data value of A33 : DM VR 2 : MAIN OXIDE-C-B to the identical data value as MAIN OXIDE-C-A.
- (36) To exit A33 : DM VR 2, press the MENU button once.



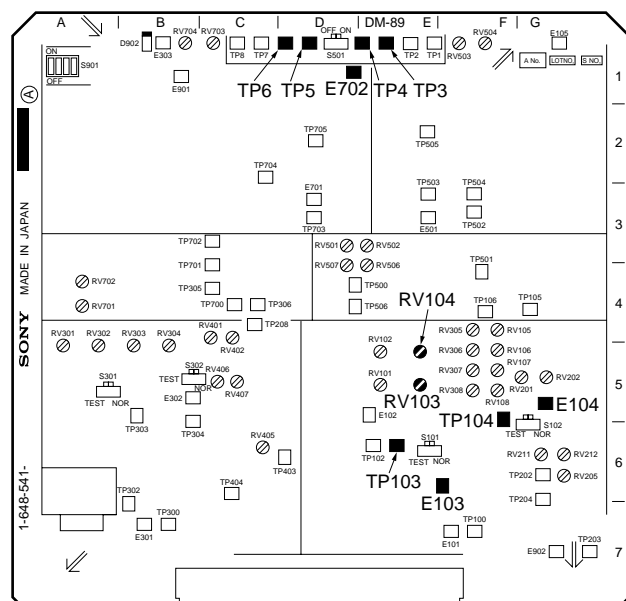
### DM-89 Board (Side A)

- (37) Enter A34 : DM VR 3 of the maintenance mode.
- (38) Connect the oscilloscope's CH-2 to TP6/DM-89(D-1). GND: E702/DM-89(D-1)
- (39) OXIDE C, Sub adjustment
  - (i) Adjust the level difference at 7 MHz use 2 MHz as the reference.  
Adjustment point: A34 : DM VR 3 : SUB OXIDE-C-A  
Specification: C =  $+11.0 \pm 0.5$  dB

**DNW-A100/A50/A45**

**DNW-A100P/A50P/A45P**

- (ii) Set the data value of A34 : DM VR 3 : SUB OXIDE-C-B to the identical data value as SUB OXIDE-C-A.
- (40) To exit A34 : DM VR 3, press the MENU button once.
- (41) Disconnect the shorting clip from TP5/DM-89(D-1).



## DM-89 Board (Side A)



**OXIDE Y adjustment [to step (56)]**

- (42) Turn RV103/DM-89 (E5) counter clockwise fully when is exist.

**Note**

RV103 is not equipped on the DM-89 board of the LOT Nos. 407 and higher.

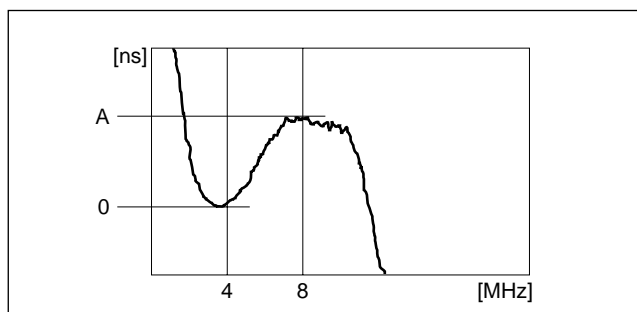
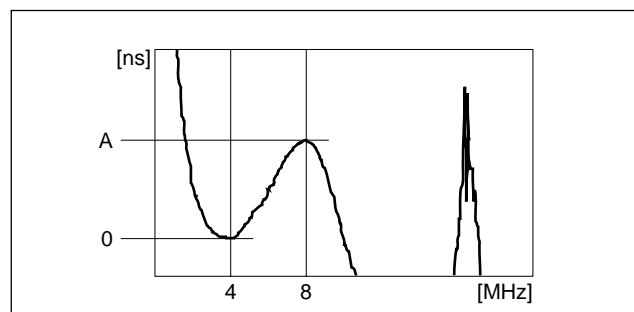
- (43) Short-circuit TP4/DM-89(E-1) and E702/DM-89(D-1) with a shorting clip.  
 (44) Connect the output of network analyzer to TP103/DM-89(E-6). GND: E103/DM-89(F-6)  
 (45) Connect the oscilloscope's CH-2 to TP104/DM-89(F-5). GND: E104/DM-89(G-5)  
 (46) OXIDE Y, Group delay adjustment

Adjust the delay time at 8 MHz use 4 MHz as the reference.

Adjustment point: **RV104/DM-89(E-5)**

Specification: DNW-A100/A50/A45:  $A = 40 \pm 5$  ns

DNW-A100P/A50P/A45P:  $A = 40 \pm 3$  ns

**DNW-A100/A50/A45****DNW-A100P/A50P/A45P**

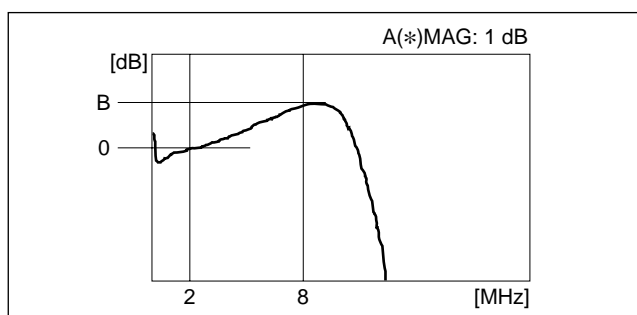
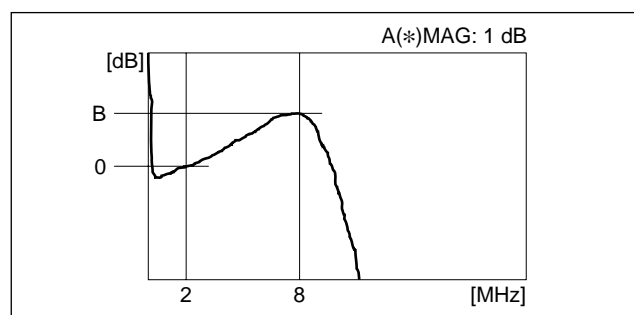
- (47) Enter A33 : DM VR 2 of the maintenance mode.  
 (48) Connect the oscilloscope's CH-2 to TP3/DM-89(E-1). GND: E702/DM-89(D-1)  
 (49) OXIDE Y, Main adjustment

- (i) Adjust the level difference at 8 MHz use 2 MHz as the reference.

Adjustment point: A33 : DM VR 2 : MAIN OXIDE-Y-A

Specification: DNW-A100/A50/A45:  $B = +2.0 \pm 0.5$  dB

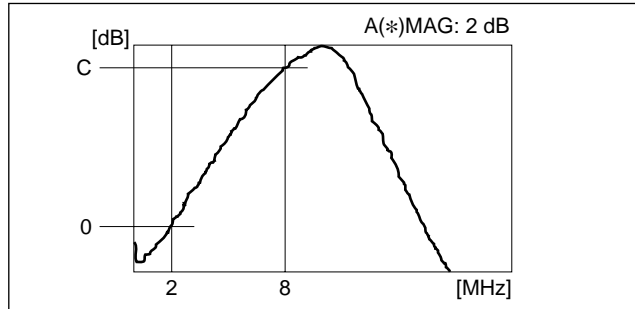
DNW-A100P/A50P/A45P:  $B = +2.5 \pm 0.5$  dB

**DNW-A100/A50/A45****DNW-A100P/A50P/A45P**

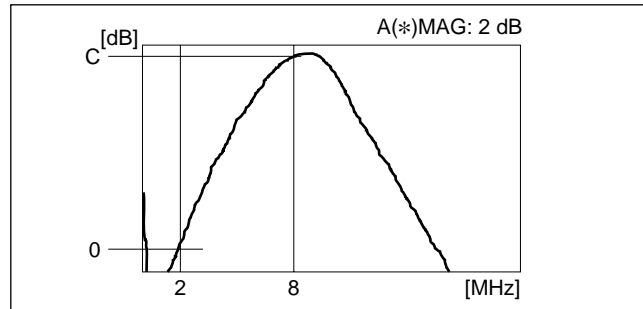
- (ii) Set the data value of A33 : DM VR 2 : MAIN OXIDE-Y-B to the identical data value as MAIN OXIDE-Y-A.

- (50) To exit A33 : DM VR 2, press the MENU button once.

- (51) Enter A34 : DM VR 3 of the maintenance mode.  
 (52) Connect the oscilloscope's CH-2 to TP2/DM-89(E-1). GND: E702/DM-89(D-1)  
 (53) OXIDE Y, Sub adjustment  
 (i) Adjust the level difference at 8 MHz use 2 MHz as the reference.  
 Adjustment point: A34 : DM VR 3 : SUB OXIDE-Y-A  
 Specification: DNW-A100/A50/A45: C =  $+14.0 \pm 0.5$  dB  
 DNW-A100P/A50P/A45P: C =  $+17.0 \pm 0.5$  dB



DNW-A100/A50/A45



DNW-A100P/A50P/A45P

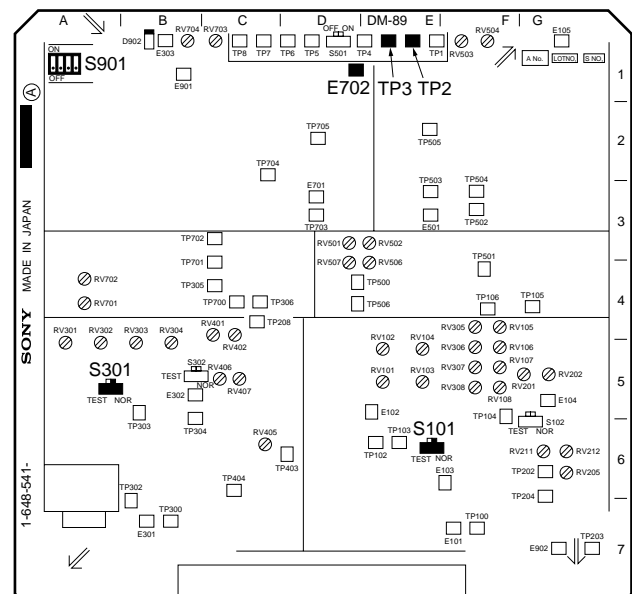
- (ii) Set the data value of A34 : DM VR 3 : SUB OXIDE-Y-B to the identical data value as SUB OXIDE-Y-A.  
 (54) Eject the alignment tape CR5-2A/CR5-2A PS.  
 (55) To exit A34 : DM VR 3, press the MENU button once.  
 (56) Disconnect the shorting clip from TP4/DM-89(E-1) and E702/DM-89(D-1).  
 (57) Reset S101/DM-89(E-6) and S301/DM-89(A-5) to NOR (right) side.  
 (58) Reset No.1 and No.3 of S901/DM-89(A-1) to OFF (down side).  
**Setting of the OMC DC offset [to step (61)]**  
 (59) Enter A35 : DM VR 4 of the maintenance mode.  
 (60) Confirm the setting data of following items of A35 : DM VR 4.

Item of A35 : DM VR 4	Setting data
OMC DC METAL-Y	E4
OMC DC METAL-C	D0
OMC DC OXIDE-Y	D0
OMC DC OXIDE-C	D0

- (61) To exit A35 : DM VR 4, press the MENU button once.

#### Data save [to step (64)]

- (62) Enter A3F : NV-RAM CONTROL of the maintenance mode, then execute "SAVE ALL ADJUST DATA".  
 (63) Check that the message "Save Complete" is displayed on the video monitor.  
 (64) To exit A3F : NV-RAM CONTROL, press the MENU button once.



DM-89 Board (Side A)

## 4. Cosine Equalizer Provisional Adjustment

### Notes

- This provisional adjustment explains how to adjust without using the network analyzer.  
When performed “3. Cosine Equalizer Adjustment” using the network analyzer, this provisional adjustment is not required.
- Do not perform this provisional adjustment except an urgent maintenance and the network analyzer is not available. If this provisional adjustment is done, it is recommended to perform “3. Cosine Equalizer Adjustment” using the network analyzer later.

- (1) Enter A33 : DM VR 2 of the maintenance mode.
- (2) Confirm the setting data of all items of A33 : DM VR 2.

Item of A33 : DM VR 2	Setting data for DNW-A100/A50/A45	Setting data for DNW-A100P/A50P/A45P
MAIN METAL-Y-A	CD	B7
MAIN METAL-Y-B	CD	B7
MAIN METAL-C-A	8E	8D
MAIN METAL-C-B	8E	8D
MAIN OXIDE-Y-A	A6	A8
MAIN OXIDE-Y-B	A6	A8
MAIN OXIDE-C-A	9E	9E
MAIN OXIDE-C-B	9E	9E

- (3) To exit A33 : DM VR 2, push the MENU button once.
- (4) Enter A34 : DM VR 3 of the maintenance mode.
- (5) Confirm the setting data of all items of A34 : DM VR 3.

Item of A34 : DM VR 3	Setting data for DNW-A100/A50/A45	Setting data for DNW-A100P/A50P/A45P
SUB METAL-Y-A	AF	B2
SUB METAL-Y-B	AF	B2
SUB METAL-C-A	70	91
SUB METAL-C-B	70	91
SUB OXIDE-Y-A	B2	BB
SUB OXIDE-Y-B	B2	BB
SUB OXIDE-C-A	A7	A8
SUB OXIDE-C-B	A7	A8

- (6) To exit A34 : DM VR 3, push the MENU button once.
- (7) Enter A35 : DM VR 4 of the maintenance mode.
- (8) Confirm the setting data of following items of A35 : DM VR 4.

Item of A35 : DM VR 4	Setting data
OMC DC METAL-Y	E4
OMC DC METAL-C	D0
OMC DC OXIDE-Y	D0
OMC DC OXIDE-C	D0

- (9) To exit A35 : DM VR 4, push the MENU button once.

## (10) Data save

Enter A3F : NV-RAM CONTROL of the maintenance mode, execute “SAVE ALL ADJUST DATA”.

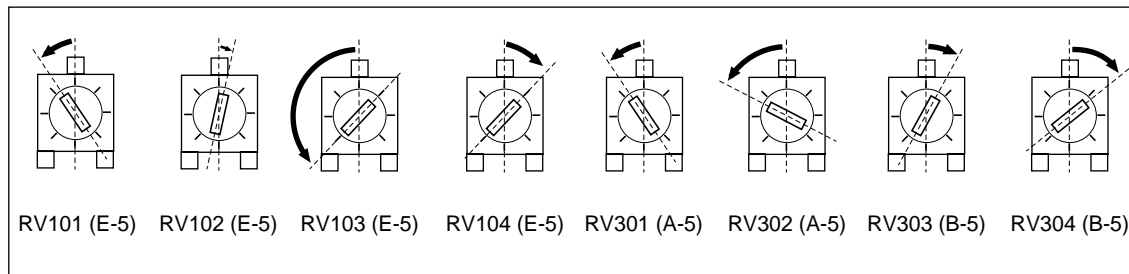
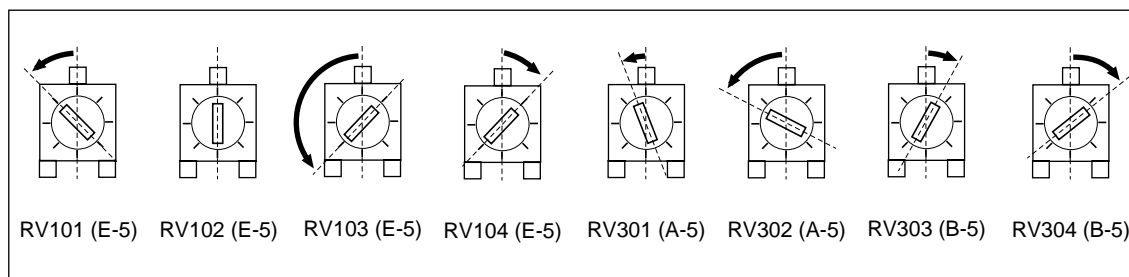
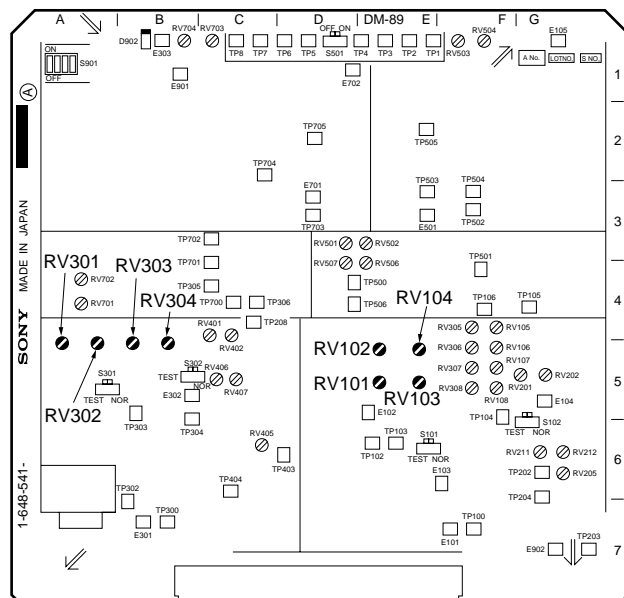
(11) Check that the message “Save Complete” is displayed on the video monitor.

(12) To exit A3F : NV-RAM CONTROL, press the MENU button once.

(13) Set the following RVs on DM-89 board to each specified position as shown figure below.

**Note**

RV103 is not equipped on the DM-89 board of the LOT Nos. 407 and higher.

**DNW-A100/A50/A45****DNW-A100P/A50P/A45P**

## 5. DM RF Output Level Rough Adjustment

Measuring equipment: Oscilloscope (Band width limit: ON)

- (1) Connect and set the oscilloscope as follows:

CH-1: TP3/DM-89(E-1), AC 100 mV/DIV, 2 ms/DIV, GND: E702/DM-89(D-1)

CH-2: TP4/DM-89(E-1), DC 1 V/DIV, GND: E702/DM-89(D-1)

Trigger: CH-2, - slope

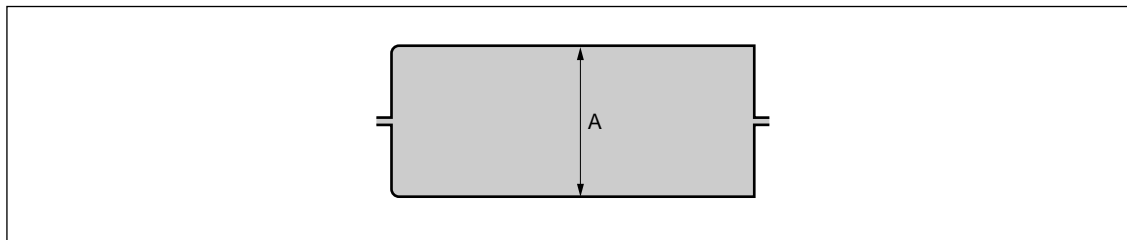
- (2) METAL Y adjustment

Playback the flat field signal portion (24:00 to 26:00) of the alignment tape CR5-1B or CR5-1B PS, and perform the adjustment.

(DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)

Adjustment point: ●RV211/DM-89(G-6)

Specification:  $A = 400 \pm 40$  mV p-p



- (3) Stop the playback of the alignment tape CR5-1B/CR5-1B PS.

- (4) Change the connection of the oscilloscope as follows:

CH-1: TP7/DM-89(C-1), GND: E702/DM-89(D-1)

CH-2: TP5/DM-89(D-1), GND: E702/DM-89(D-1)

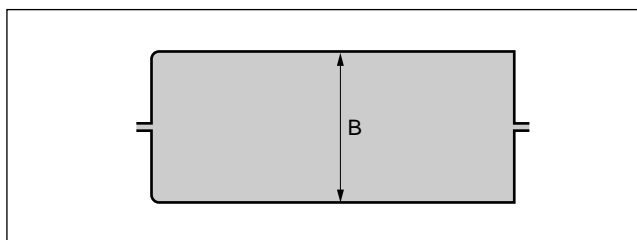
- (5) METAL C adjustment

Playback the flat field signal portion (24:00 to 26:00) of the alignment tape CR5-1B or CR5-1B PS, and perform the adjustment.

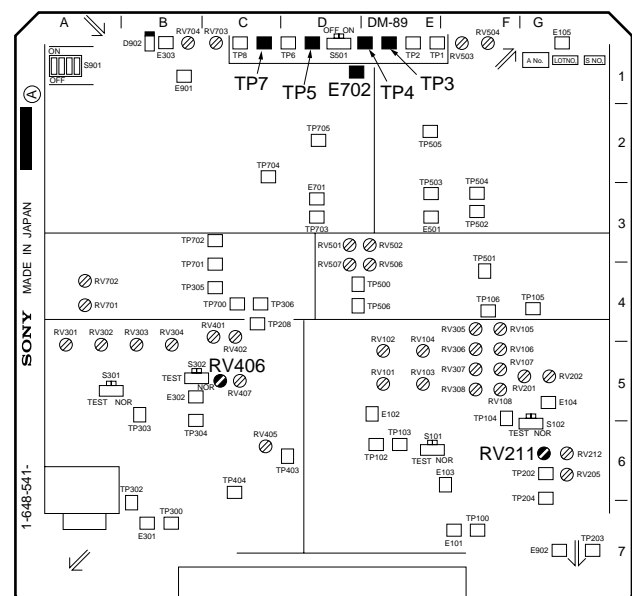
(DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)

Adjustment point: ●RV406/DM-89(C-5)

Specification:  $B = 400 \pm 40$  mV p-p



- (6) Eject the alignment tape CR5-1B/CR5-1B PS.



DM-89 Board (Side A)

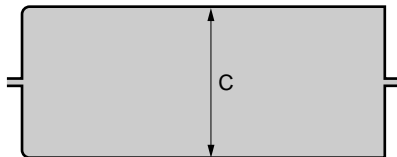
### (7) OXIDE C adjustment

Playback the 75% color-bar signal portion (0:00 to 3:00) of the alignment tape CR5-2A or CR5-2A PS, and perform the adjustment.

(DNW-A100/A50/A45: CR5-2A, DNW-A100P/A50P/A45P: CR5-2A PS)

Adjustment point: RV407/DM-89(C-5)

Specification:  $C = 400 \pm 40 \text{ mV p-p}$



(8) Stop the playback of the alignment tape CR5-2A/CR5-2A PS.

(9) Change the connection of the oscilloscope as follows:

CH-1: TP3/DM-89(E-1), GND: E702/DM-89(D-1)

CH-2: TP4/DM-89(E-1), GND: E702/DM-89(D-1)

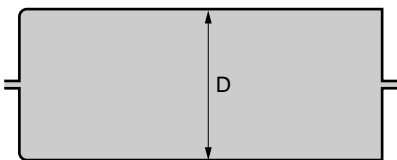
(10) OXIDE Y adjustment

Playback the 75% color-bar signal portion (0:00 to 3:00) of the alignment tape CR5-2A or CR5-2A PS, and perform the adjustment.

(DNW-A100/A50/A45: CR5-2A, DNW-A100P/A50P/A45P: CR5-2A PS)

Adjustment point: RV212/DM-89(G-6)

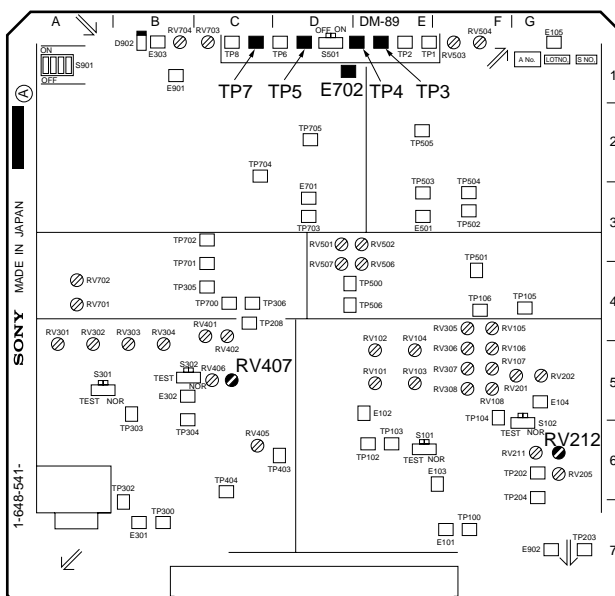
Specification:  $D = 400 \pm 40$  mV p-p



(11) Stop the playback of the alignment tape CR5-2A/  
CR5-2A PS or eject it.

### Note

It is not necessary to eject the alignment tape when perform subsequent “6. OMC Carrier Balance Adjustment”.



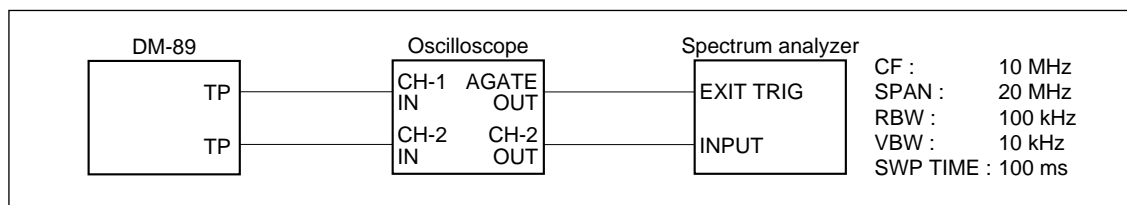
### DM-89 Board (Side A)

## 6. OMC Carrier Balance Adjustment

### Note

If the spectrum analyzer is not available, perform “7. OMC Carrier Balance Provisional Adjustment”.

Measuring equipments: Spectrum analyzer and Oscilloscope (Refer to next figure.)



### Connection and Setting of Spectrum Analyzer

- (1) Connect and set the oscilloscope as follows:

CH-1: TP4/DM-89(E-1), DC 1 V/DIV, 5 ms/DIV, GND: E702/DM-89(D-1)

CH-2: TP105/DM-89(G-4), AC 1 V/DIV, GND: E105/DM-89(G-1)

Trigger: CH-1, - slope

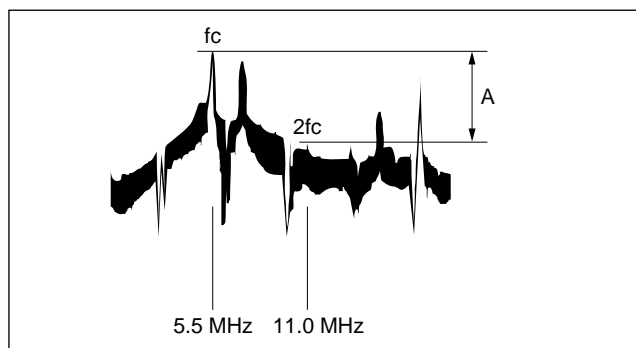
- (2) OXIDE Y adjustment

Playback the pulse & bar signal portion (9:00 to 11:00) of the alignment tape CR5-2A or CR5-2A PS, and perform the adjustment.

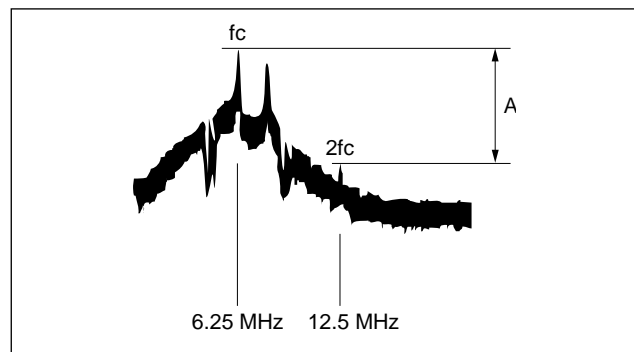
(DNW-A100/A50/A45: CR5-2A, DNW-A100P/A50P/A45P: CR5-2A PS)

Adjustment points:  $\odot$ RV107/DM-89(F-5) and  $\odot$ RV108/DM-89(F-5)

Specification:  $A \geq 35$  dB

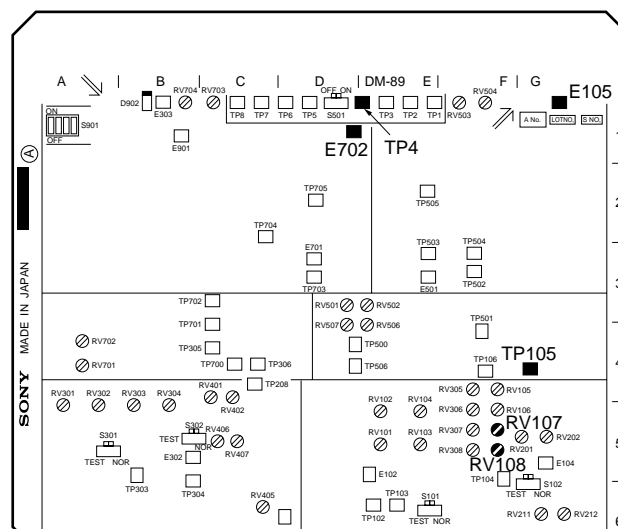


**DNW-A100P/A50P/A45P**



**DNW-A100/A50/A45**

- (3) Stop the playback of the alignment tape CR5-2A/CR5-2A PS.



DM-89 Board (Side A)

- (4) Change the connection of the oscilloscope as follows:

CH-1: TP5/DM-89(D-1), GND: E702/DM-89(D-1)

CH-2: TP305/DM-89(C-4), GND: E303/DM-89(B-1)

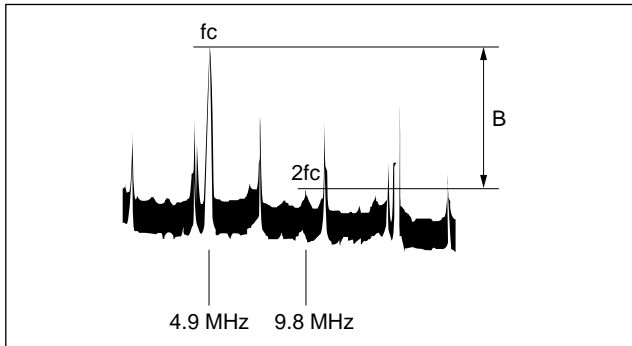
- (5) OXIDE C adjustment

Playback the pulse & bar signal portion (9:00 to 11:00) of the alignment tape CR5-2A or CR5-2A PS, and perform the adjustment.

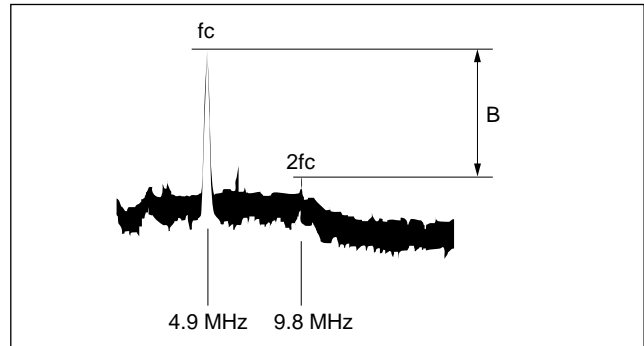
(DNW-A100/A50/A45: CR5-2A, DNW-A100P/A50P/A45P: CR5-2A PS)

Adjustment points: ●RV307/DM-89(F-5) and ●RV308/DM-89(F-5)

Specification:  $B \geq 35$  dB



DNW-A100/A50/A45



DNW-A100P/A50P/A45P

- (6) Eject the alignment tape CR5-2A/CR5-2A PS.

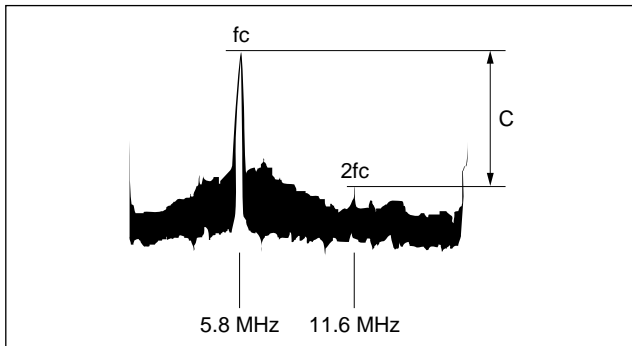
- (7) METAL C adjustment

Playback the flat field signal portion (24:00 to 26:00) of the alignment tape CR5-1B or CR5-1B PS, and perform the adjustment.

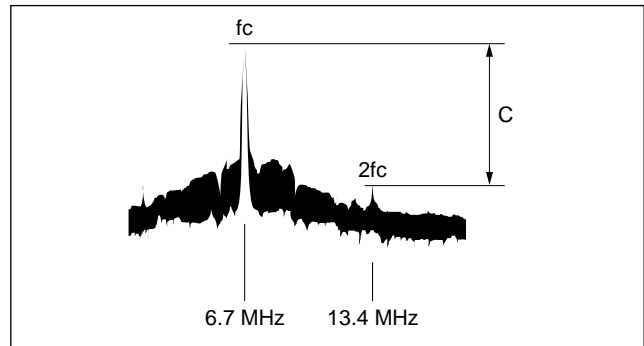
(DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)

Adjustment points: ●RV305/DM-89(F-4) and ●RV306/DM-89(F-5)

Specification:  $C \geq 40$  dB



DNW-A100/A50/A45



DNW-A100P/A50P/A45P

- (8) Stop the playback of the alignment tape CR5-1B/CR5-1B PS.



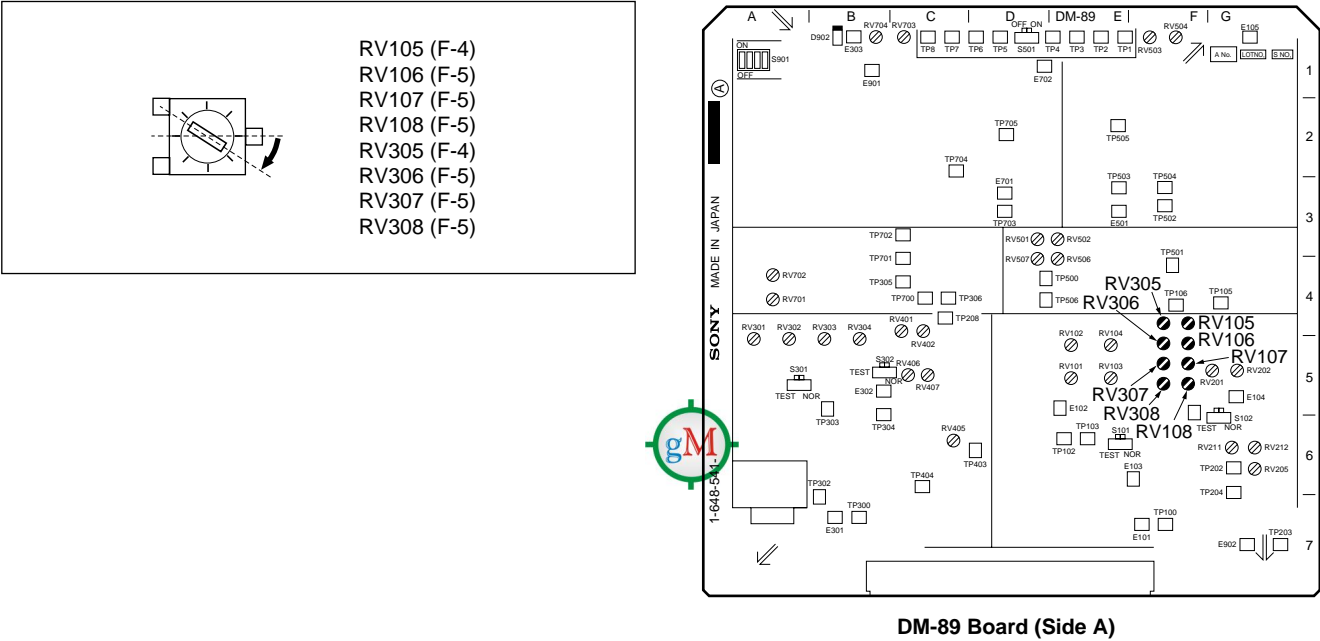


7. OMC Carrier Balance Provisional Adjustment

Notes

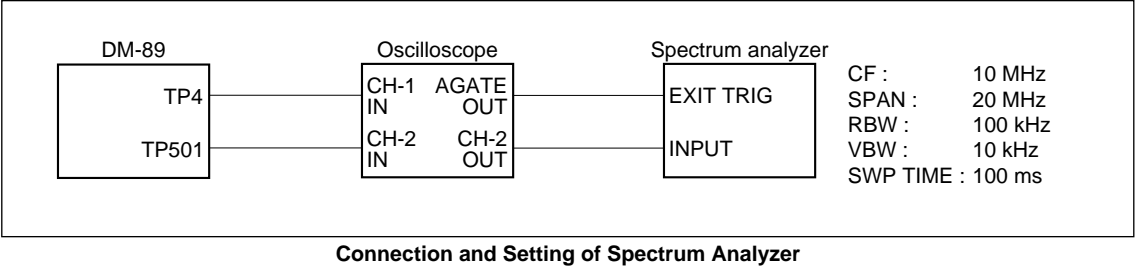
- This provisional adjustment explains how to adjust without using the spectrum analyzer.  
When performed “6. OMC Carrier Balance Adjustment” using the spectrum analyzer, this provisional adjustment is not required.
- Perform this provisional adjustment only when the spectrum analyzer is not available for an urgent maintenance. At a later date, be sure to perform “6. OMC Carrier Balance Adjustment” using the spectrum analyzer.

Set the following RVs on DM-89 board to specified position respectively as show below.



8. Demodulator Limiter Balance Adjustment

Measuring equipment: Spectrum analyzer and Oscilloscope (Refer to next figure.)




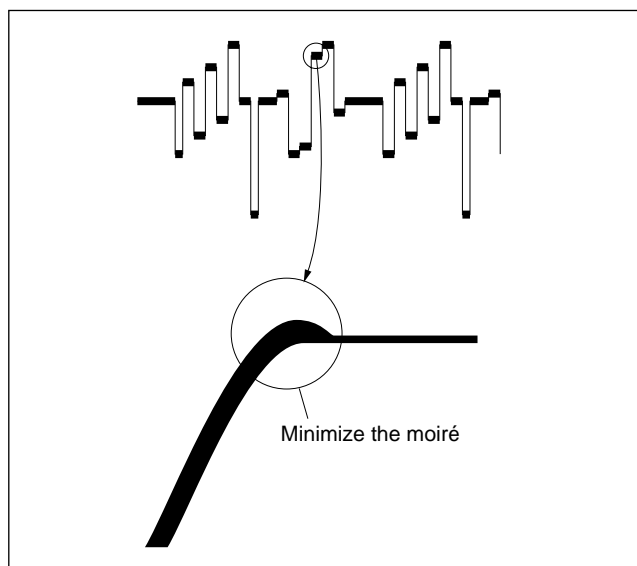
Note

Perform the provisional adjustment only when the spectrum analyzer is not available for an urgent maintenance. At a later date, be sure to perform the adjustment using the spectrum analyzer.

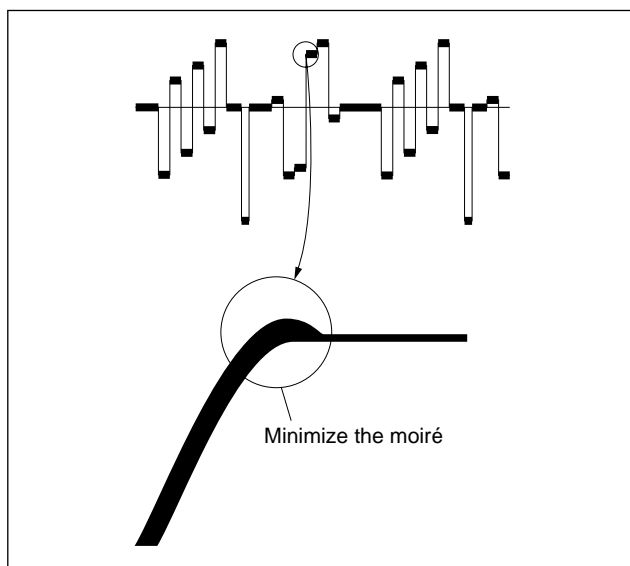


### C adjustment

- (4) Connect and set the oscilloscope as follows:  
CH-2: TP8/DM-89(C-1), AC 200 mV/DIV, 10  $\mu$ s/DIV, GND: E702/DM-89(D-1)
- (5) Playback the color-bar signal portion (14:00 to 17:00) of the alignment tape CR5-1B or CR5-1B PS, and perform the adjustment.  
(DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)  
Adjustment point: RV702/DM-89(A-4)  
Specification: Minimize the moiré of specified part.



## DNW-A100/A50/A45

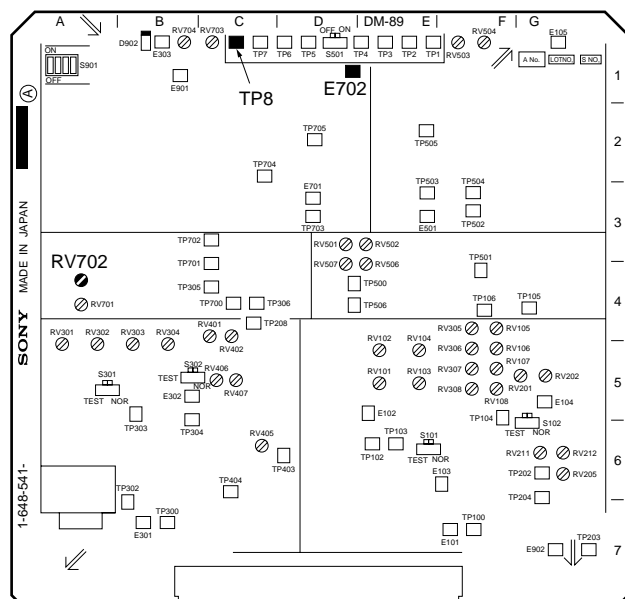


**DNW-A100P/A50P/A45P**

- (6) Stop the playback of the alignment tape CR5-1B/CR5-1B PS or eject it.

### Note

It is not necessary to eject the alignment tape when perform subsequent “9. Non-linear Output Level Adjustment”.



## DM-89 Board (Side A)



- (4) Change the connection of the oscilloscope as follows:  
 CH-1: TP705/DM-89(D-2), GND: E701/DM-89(D-3)

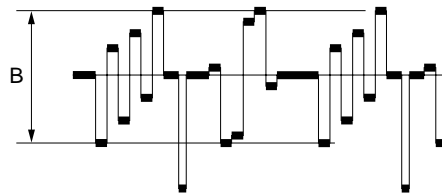
For DNW-A100P/A50P/A45P only, perform steps (5) and (6).

- (5) METAL C adjustment

Playback the 100% color-bar signal portion (14:00 to 17:00) of the alignment tape CR5-1B PS, and perform the adjustment.

Adjustment point: ●RV703/DM-89(C-1)

Specification:  $B = 933 \pm 10 \text{ mV}$



- (6) Eject the alignment tape CR5-1B PS.

- (7) C adjustment for DNW-A100/A50/A45

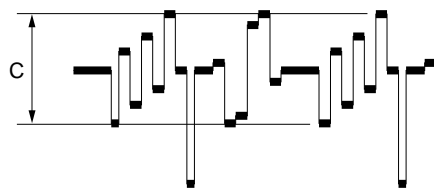
OXIDE C adjustment for DNW-A100P/A50P/A45P

Playback the 75% color-bar signal portion of the alignment tape CR5-1B or CR5-2A PS, and perform the adjustment.

[DNW-A100/A50/A45: CR5-1B (14:00 to 17:00), DNW-A100P/A50P/A45P: CR5-2A PS (0:00 to 3:00) ]

Adjustment point: ●RV704/DM-89(B-1)

Specification:  $C = 700 \pm 10 \text{ mV}$



- (8) For DNW-A100/A50/A45, eject the alignment tape CR5-1B.  
 For DNW-A100P/A50P/A45P, stop the playback of the alignment tape CR5-2A PS.

(9) Change the connection of the oscilloscope as follows:

CH-1: TP505/DM-89(E-2), GND: E501/DM-89(E-3)

(10) OXIDE Y adjustment

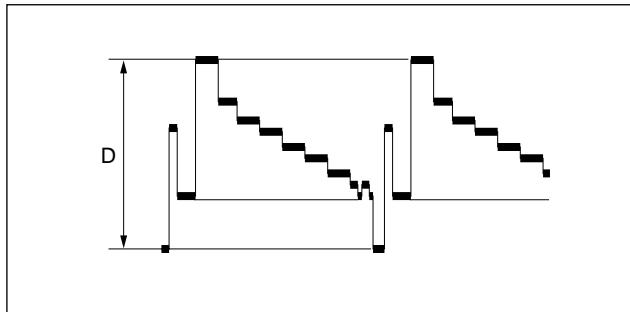
Playback the 75% color-bar signal portion (0:00 to 3:00) of the alignment tape CR5-2A or CR5-2A

PS, and perform the adjustment.

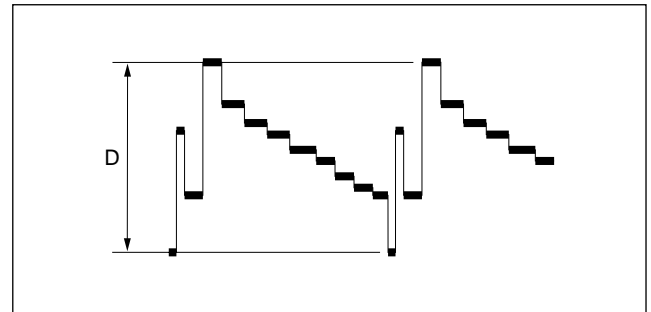
(DNW-A100/A50/A45: CR5-2A, DNW-A100P/A50P/A45P: CR5-2A PS)

Adjustment point: ●RV504/DM-89(F-1)

Specification:  $D = 1.00 \pm 0.01$  V

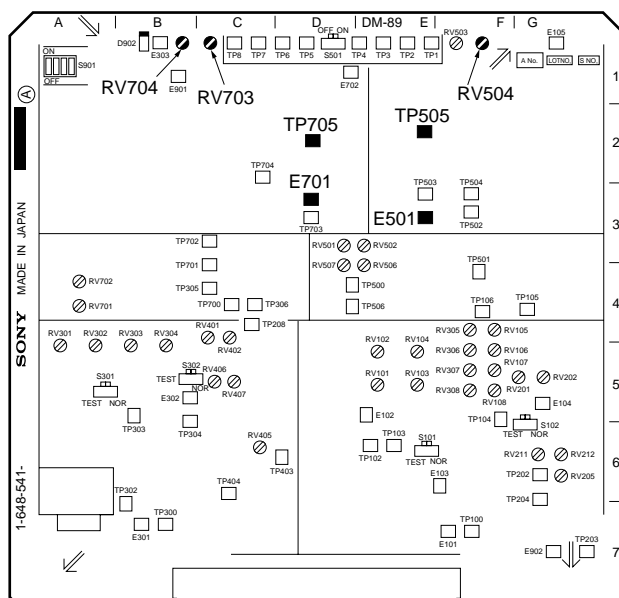


DNW-A100/A50/A45



DNW-A100P/A50P/A45P

(11) Eject the alignment tape CR5-2A/CR5-2A PS.



DM-89 Board (Side A)

10. PB Frequency Response Adjustment

Measuring equipment: Component waveform monitor (terminated with 75 Ω)

(1) Enter A32 : DM VR 1 of the maintenance mode.

METAL Y adjustment [to step (6)]

- (2) Observe the Y output signal at the component waveform monitor.
- (3) Playback the multiburst signal portion (8:00 to 11:00) of the alignment tape CR5-1B or CR5-1B PS, and adjust the level at specified frequency part by table below.
- And check that levels at others are within specifications.

(DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)

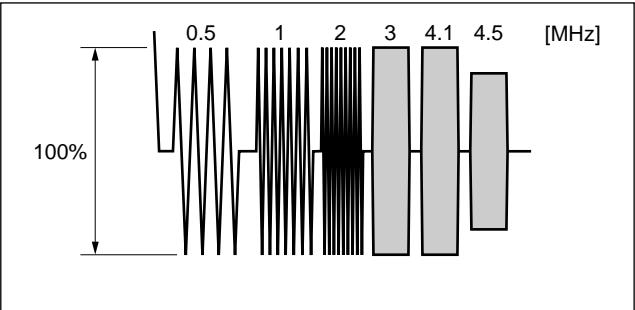
Note

As the Y output is overlapped the outputs of A and B channels on the component waveform monitor, adjust/check in each channel.

Adjustment points: A channel: A32 : DM VR 1 : EQ1 METAL-Y-A  
B channel: A32 : DM VR 1 : EQ1 METAL-Y-B

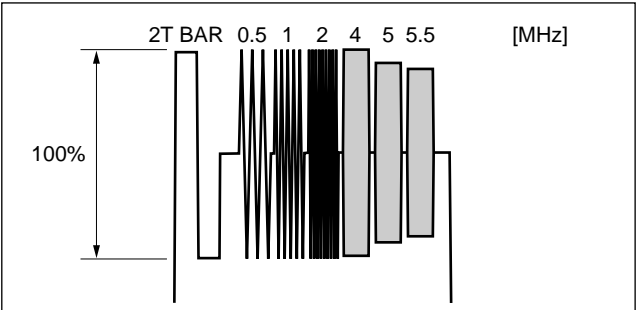
Specifications (A and B channels): See the table below.

Frequency	Specification for DNW-A100/A50/A45
0.5 MHz	Reference: 100% {0 dB}
4.1 MHz	Adjust : 94 (100 to 90)% {−0.5 ±0.5 dB}
1 MHz	Check : 100 (106 to 63)% {0 ±0.5 dB}
2 MHz	Check : 100 (106 to 63)% {0 ±0.5 dB}
3 MHz	Check : 100 (106 to 63)% {0 ±0.5 dB}
4.5 MHz	Check : 80 (106 to 63)% {−2.0 ±2.5 dB}



DNW-A100/A50/A45

Frequency	Specification for DNW-A100P/A50P/A45P
2T BAR	Reference: 100% {0 dB}
5 MHz	Adjust : 91 (96 to 87)% {−0.8 ±0.4 dB}
0.5 MHz	Check : 100 (106 to 63)% {0 ±0.5 dB}
1 MHz	Check : 100 (106 to 63)% {0 ±0.5 dB}
2 MHz	Check : 100 (106 to 63)% {0 ±0.5 dB}
4 MHz	Check : 100 (106 to 63)% {0 ±0.5 dB}
5.5 MHz	Check : 84 (106 to 63)% {−1.5 ±2.0 dB}



DNW-A100P/A50P/A45P

- (4) Connect the video monitor to VIDEO OUTPUT COMPOSITE 2 connector.
- (5) Playback the multiburst signal portion (8:00 to 11:00) of the alignment tape CR5-1B or CR5-1B PS, and check that the playback picture on the video monitor has no flicker.
- (DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)
- (6) Reconnect the video monitor to VIDEO OUTPUT COMPOSITE 3 (SUPER) connector.



**METAL C adjustment [to step (9)]**

- (7) Observe the R-Y output signal at the component waveform monitor.
- (8) Playback the multiburst signal portion (8:00 to 11:00) of the alignment tape CR5-1B or CR5-1B PS, and adjust the level at specified frequency part by table below.

And check that levels at others are within specifications.

(DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)

**Note**

As the R-Y output is overlapped the outputs of A and B channels on the component waveform monitor, adjust/check in each channel.

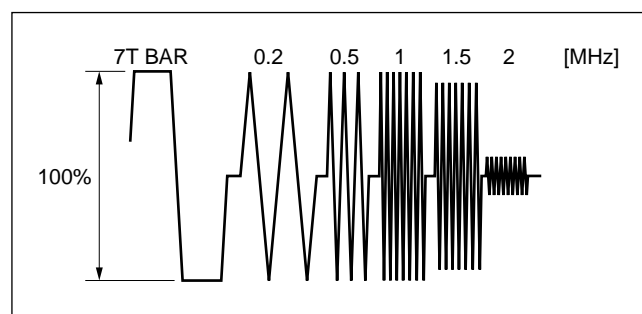
Adjustment points: A channel: A32 : DM VR 1 : EQ1 METAL-C-A

B channel: A32 : DM VR 1 : EQ1 METAL-C-B

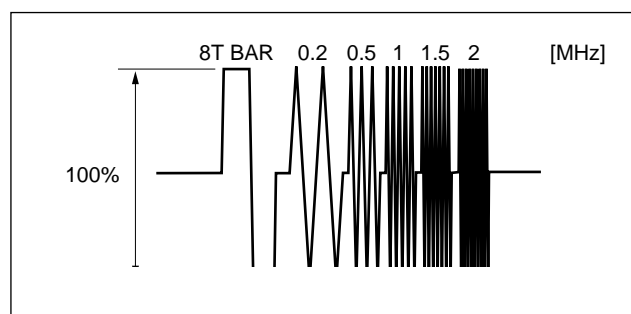
Specifications (A and B channels): See the table below.

Frequency	Specification for DNW-A100/A50/A45
7T BAR	Reference: 100% {0 dB}
1 MHz	Adjust : 94 (100 to 89)% { $-0.5 \pm 0.5$ dB}
0.2 MHz	Check : 100 (106 to 71)% { $0 \pm 3.5$ dB}
0.5 MHz	Check : 100 (106 to 71)% { $0 \pm 3.0$ dB}
1.5 MHz	Check : 80 (106 to 71)% { $-2.0 \pm 1.5$ dB}

Frequency	Specification for DNW-A100P/A50P/A45P
8T BAR	Reference: 100% {0 dB}
1.5 MHz	Adjust : 93 (102 to 85)% { $-0.6 \pm 0.8$ dB}
0.2 MHz	Check : 100 (106 to 71)% { $0 \pm 3.5$ dB}
0.5 MHz	Check : 100 (106 to 71)% { $0 \pm 3.0$ dB}
1 MHz	Check : 100 (106 to 71)% { $0 \pm 0.5$ dB}
2 MHz	Check : 80 (106 to 71)% { $-2.0 \pm 1.5$ dB}



**DNW-A100/A50/A45**



**DNW-A100P/A50P/A45P**

- (9) Observe the B-Y output signal at the component waveform monitor, confirm that the B-Y output signal levels at every frequencies are within specifications shown above.
- If the B-Y output signal is out of specifications, perform fine adjustment for R-Y until the specifications for both R-Y and B-Y output signals are satisfied.
- (10) Eject the alignment tape CR5-1B/CR5-1B PS.

**OXIDE Y adjustment [to step (13)]**

(11) Observe the Y output signal at the component waveform monitor.

(12) Playback the multiburst signal portion (3:00 to 6:00) of the alignment tape CR5-2A or CR5-2A PS, and adjust the level at specified frequency part by table below.

And check levels at others are within specifications.

(DNW-A100/A50/A45: CR5-2A, DNW-A100P/A50P/A45P: CR5-2A PS)

**Note**

As the Y output is overlapped the outputs of A and B channels on the component waveform monitor, adjust/check in each channel.

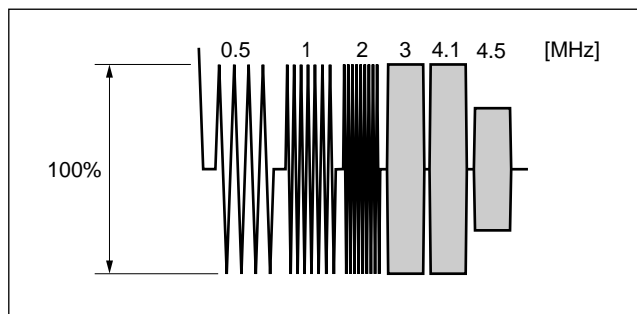
Adjustment points: A channel: A32 : DM VR 1 : EQ1 OXIDE-Y-A

B channel: A32 : DM VR 1 : EQ1 OXIDE-Y-B

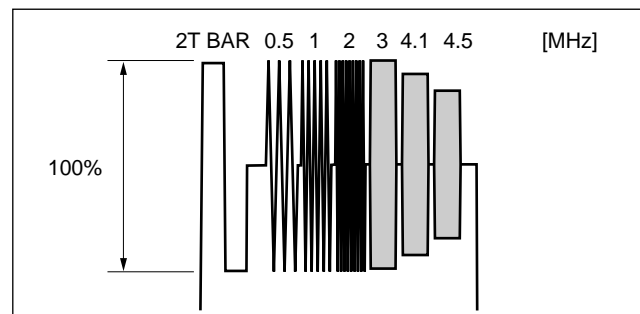
Specifications (A and B channels): See the table below.

Frequency	Specification for DNW-A100/A50/A45
0.5 MHz	Reference: 100% {0 dB}
2 MHz	Adjust : 100 (104 to 95)% {0 $\pm 0.3$ dB}
1 MHz	Check : 100 (106 to 50)% {0 $\pm 0.5$ dB}
3 MHz	Check : 89 (106 to 50)% {−1.0 $\pm 1.5$ dB}
4.1 MHz	Check : 71 (106 to 50)% {−3.0 $\pm 3.5$ dB}

Frequency	Specification for DNW-A100P/A50P/A45P
2T BAR	Reference: 100% {0 dB}
3 MHz	Adjust : 89 (100 to 79)% {−1.0 $\pm 1.0$ dB}
0.5 MHz	Check : 100 (106 to 50)% {0 $\pm 0.5$ dB}
1 MHz	Check : 100 (106 to 50)% {0 $\pm 0.5$ dB}
2 MHz	Check : 100 (106 to 50)% {0 $\pm 0.5$ dB}
4.1 MHz	Check : 71 (106 to 50)% {−3.0 $\pm 3.5$ dB}



**DNW-A100/A50/A45**



**DNW-A100P/A50P/A45P**

(13) Playback the multiburst signal portion (3:00 to 6:00) of the alignment tape CR5-2A or CR5-2A PS, and confirm that the output level difference between A and B channels is hardly noticeable at high frequency (4.5 MHz) part.

**Note**

If the output level difference at 4.5 MHz part is noticeable, perform the adjustment of A34 : DM VR 3 : SUB OXIDE-A or -B. Be sure to adjust for the lower level signal only as following steps ① through ⑤ on a playing back the multiburst signal portion (3:00 to 6:00) of the alignment tape.

- ① To exit A32 : DM VR 1, press the MENU button once.
- ② Enter A34 : DM VR 3 of the maintenance mode.
- ③ Change the data value of SUB OXIDE-Y-A (A channel side), and judge a lower level channel.
- ④ If the B channel side is lower, return the data value of SUB OXIDE-Y-A to the former data, then adjust (add to the data value) the SUB OXIDE-Y-B until the level at 4.5 MHz of B channel is equal to the level at 4.5 MHz of A channel.  
If the A channel side is lower, adjust (add to the data value) the SUB OXIDE-Y-A until the level at 4.5 MHz of A channel is equal to the level at 4.5 MHz of B channel.
- ⑤ To exit A34 : DM VR 3, press the MENU button once.

**OXIDE C adjustment [to step (16)]**

- (14) Observe the R-Y output signal at the component waveform monitor.
- (15) Playback the multiburst signal portion (3:00 to 6:00) of the alignment tape CR5-2A or CR5-2A PS, and adjust the level at specified frequency part by table below.

And check levels at others are within specifications.

(DNW-A100/A50/A45: CR5-2A, DNW-A100P/A50P/A45P: CR5-2A PS)

**Note**

As the R-Y output is overlapped the outputs of A and B channels on the component waveform monitor, adjust/check in each channel.

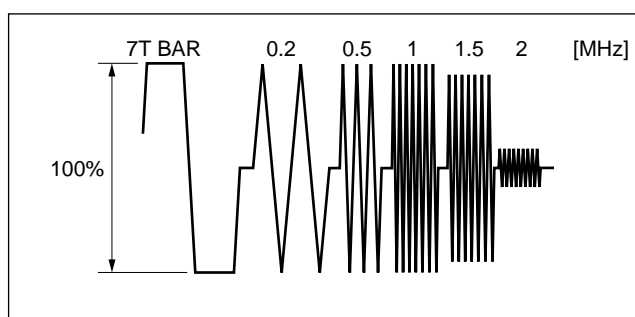
Adjustment points: A channel: A32 : DM VR 1 : EQ1 OXIDE-C-A

B channel: A32 : DM VR 1 : EQ1 OXIDE-C-B

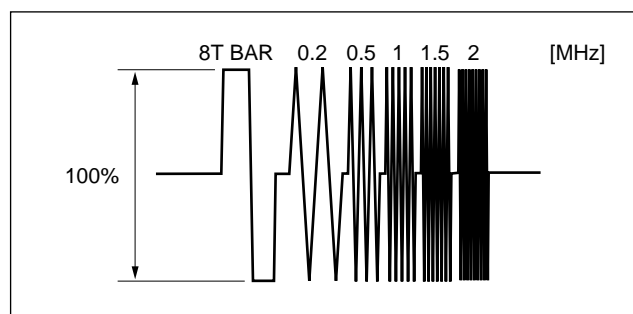
Specifications (A and B channels): See the table below.

Frequency	Specification for DNW-A100/A50/A45
7T BAR	Reference: 100% {0 dB}
1 MHz	Adjust : 94 (100 to 89)% { $-0.5 \pm 0.5$ dB}
0.2 MHz	Check : 100 (106 to 71)% { $0 \pm 0.5$ dB}
0.5 MHz	Check : 95 (106 to 71)% { $-0.4 \pm 0.8$ dB}
1.5 MHz	Check : 80 (106 to 71)% { $-2.0 \pm 1.5$ dB}

Frequency	Specification for DNW-A100P/A50P/A45P
8T BAR	Reference: 100% {0 dB}
1 MHz	Adjust : 94 (102 to 86)% { $-0.5 \pm 0.8$ dB}
0.2 MHz	Check : 100 (106 to 71)% { $0 \pm 0.5$ dB}
0.5 MHz	Check : 100 (106 to 71)% { $0 \pm 0.5$ dB}
1.5 MHz	Check : 84 (106 to 71)% { $-1.5 \pm 1.0$ dB}



DNW-A100/A50/A45



DNW-A100P/A50P/A45P

- (16) Observe the B-Y output signal at the component waveform monitor, confirm that the B-Y output signal levels at every frequencies are within specifications shown above.
- If the B-Y output signal is out of specifications, perform fine adjustment for R-Y until the specifications for both R-Y and B-Y output signals are satisfied.
- (17) Eject the alignment tape CR5-2A/CR5-2A PS.
- (18) To exit A32 : DM VR 1, press the MENU button once.

**Data save [to step (21)]**

- (19) Enter A3F : NV-RAM CONTROL of the maintenance mode, execute "SAVE ALL ADJUST DATA".
- (20) Check that the message "Save Complete" is displayed on the video monitor.
- (21) To exit A3F : NV-RAM CONTROL, press the MENU button once.

## 11. Drop-out Compensation Equalizer Adjustment

Measuring equipment: Oscilloscope

- (1) Connect and set the oscilloscope as follows:

CH-1: TP203/DM-89(G-7), DC >200 mV/DIV, 2 ms/DIV, GND: E902/DM-89(G-7)

CH-2: TP4/DM-89(E-1), DC 1 V/DIV, GND: E702/DM-89(D-1)

Trigger: CH-2, - slope

- ## (2) METAL Y adjustment

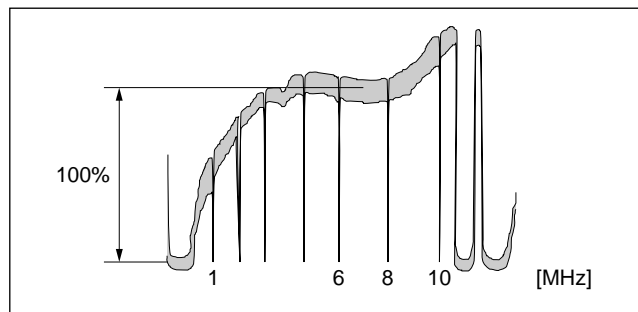
Playback the RF sweep signal portion (0:00 to 2:00) of the alignment tape CR5-1B or CR5-1B PS, and perform the adjustment.

(DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)

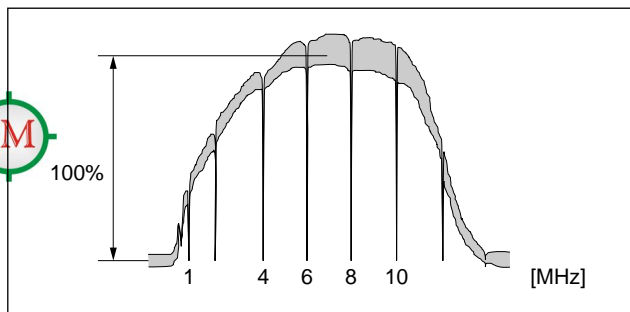
Adjustment point: RV201/DM-89(G-5)

Specifications: See the table below.

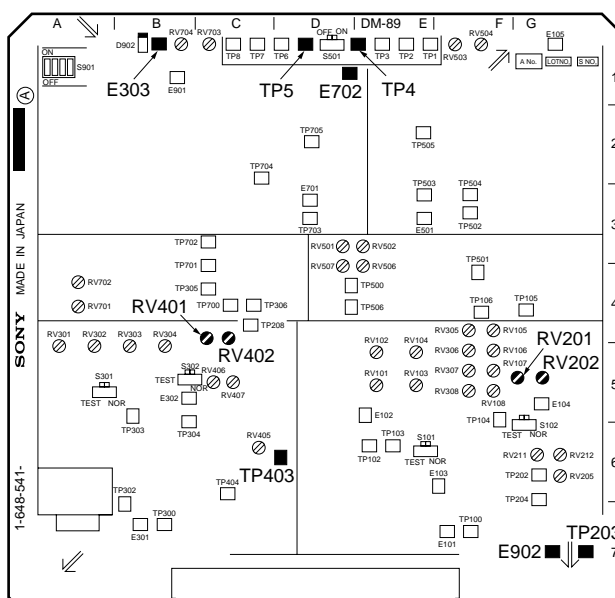
Frequency	Specification for DNW-A100/A50/A45
6 MHz	Reference: 100% {0 dB}
8 MHz	100 ±20 % {0 ±2.0 dB}
10 MHz	120 $\overset{+50}{-20}$ % {2.0 $\overset{+5.0}{-2.0}$ dB}

**DNW-A100/A50/A45**

Frequency	Specification for DNW-A100P/A50P/A45P
6 MHz	Reference: 100% {0 dB}
8 MHz	100 ±20 % {0 ±2.0 dB}
10 MHz	110 <sup>+40</sup> <sub>-20</sub> % {1.0 <sup>+5.0</sup> <sub>-2.0</sub> dB}



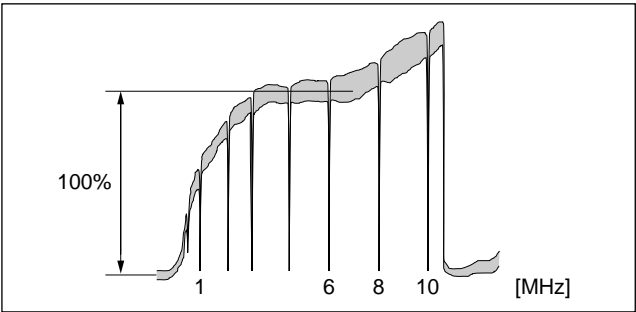
## DNW-A100P/A50P/A45P



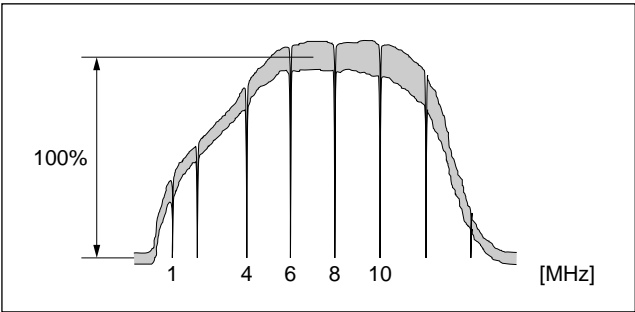
### DM-89 Board (Side A)

- (3) Change the connection of the oscilloscope as follows:  
CH-1: TP403/DM-89(D-6), GND: E303/DM-89(B-1)  
CH-2: TP5/DM-89(D-1), GND: E702/DM-89(D-1)
- (4) METAL C adjustment  
Playback the RF sweep signal portion (0:00 to 2:00) of the alignment tape CR5-1B or CR5-1B PS, and perform the adjustment.  
(DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)  
Adjustment point: RV401/DM-89(G-4)  
Specifications: See the table below.

Frequency	Specification
6 MHz	Reference: 100% {0 dB}
8 MHz	100 ±20 % {0 ±2.0 dB}
10 MHz	110 ±40 % {1.0 ±4.0 dB}

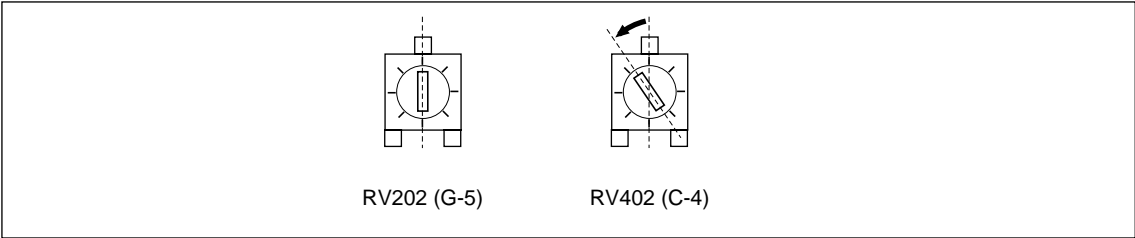


DNW-A100/A50/A45



DNW-A100P/A50P/A45P

- (5) Stop the playback of the alignment tape CR5-1B/CR5-1B PS or eject it.
- Note**  
It is not necessary to eject the alignment tape when perform subsequent “12. DM RF Output Level Adjustment”.
- (6) OXIDE Y/C adjustment  
Set the following RVs on DM-89 board to each specified position as show below.



## 12. DM RF Output Level Adjustment

Measuring equipment: Oscilloscope (Band width limit: ON)

- (1) Connect and set the oscilloscope as follows:

CH-1: TP3/DM-89(E-1), AC 100 mV/DIV, 2 ms/DIV, GND: E702/DM-89(D-1)

CH-2: TP4/DM-89(E-1), DC 1 V/DIV, GND: E702/DM-89(D-1)

Trigger: CH-2, - slope

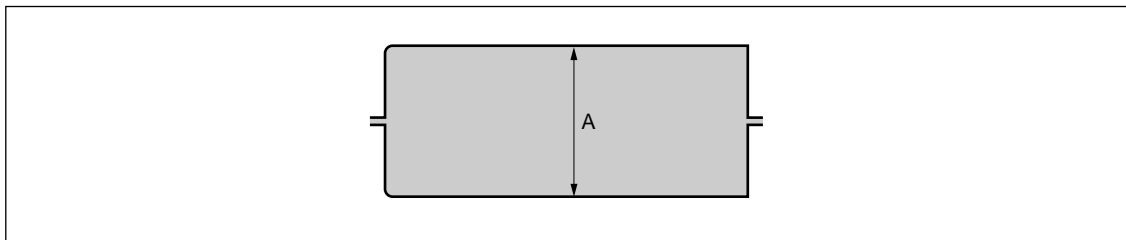
- (2) METAL Y adjustment

Playback the flat field signal portion (24:00 to 26:00) of the alignment tape CR5-1B or CR5-1B PS, and perform the adjustment.

(DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)

Adjustment point: ●RV211/DM-89(G-6)

Specification:  $A = 400 \pm 40$  mV p-p



- (3) Stop the playback of the alignment tape CR5-1B/CR5-1B PS.

- (4) Change the connection of the oscilloscope as follows:

CH-1: TP7/DM-89(C-1), GND: E702/DM-89(D-1)

CH-2: TP5/DM-89(D-1), GND: E702/DM-89(D-1)

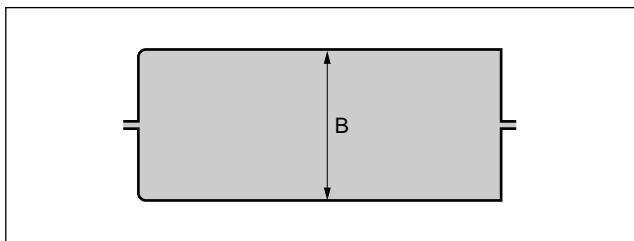
- (5) METAL C adjustment

Playback the flat field signal portion (24:00 to 26:00) of the alignment tape CR5-1B or CR5-1B PS, and perform the adjustment.

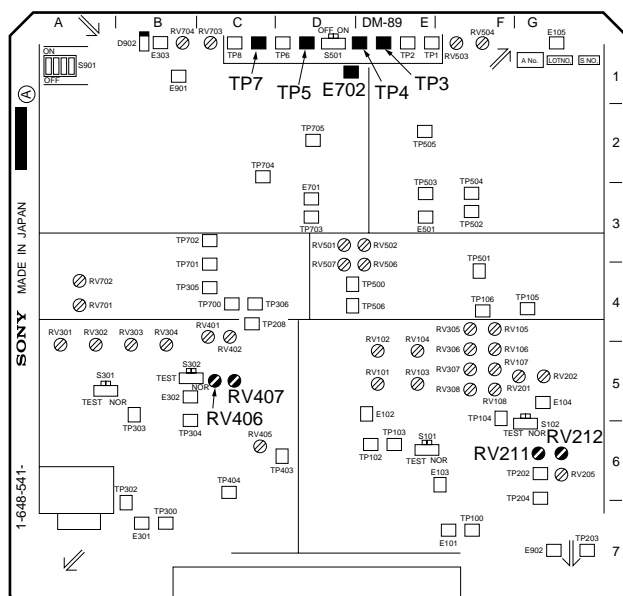
(DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)

Adjustment point: ●RV406/DM-89(C-5)

Specification:  $B = 400 \pm 40$  mV p-p



- (6) Eject the alignment tape CR5-1B/CR5-1B PS.



DM-89 Board (Side A)

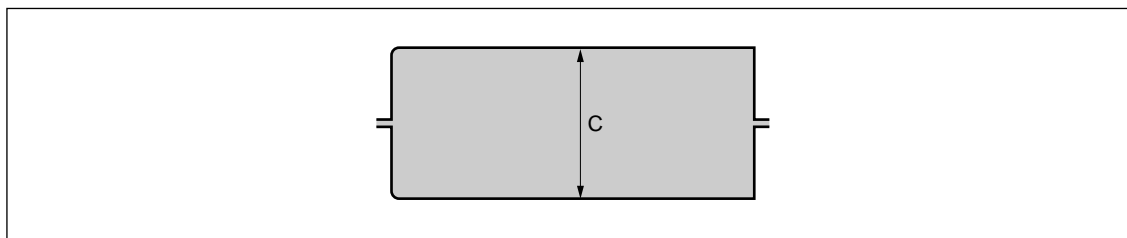
## (7) OXIDE C adjustment

Playback the 75% color-bar signal portion (0:00 to 3:00) of the alignment tape CR5-2A or CR5-2A PS, and perform the adjustment.

(DNW-A100/A50/A45: CR5-2A, DNW-A100P/A50P/A45P: CR5-2A PS)

Adjustment point: RV407/DM-89(C-5)

Specification:  $C = 400 \pm 40$  mV p-p



## (8) Change the connection of the oscilloscope as follows:

CH-1: TP3/DM-89(E-1), GND: E702/DM-89(D-1)

CH-2: TP4/DM-89(E-1), GND: E702/DM-89(D-1)

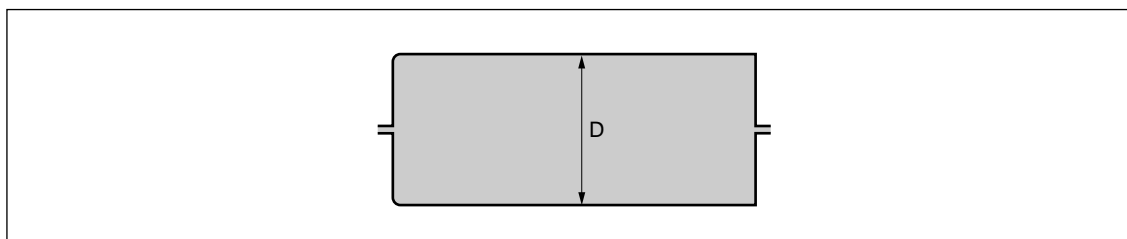
## (9) OXIDE Y adjustment

Playback the 75% color-bar signal portion (0:00 to 3:00) of the alignment tape CR5-2A or CR5-2A PS, and perform the adjustment.

(DNW-A100/A50/A45: CR5-2A, DNW-A100P/A50P/A45P: CR5-2A PS)

Adjustment point: RV212/DM-89(G-6)

Specification:  $D = 400 \pm 40$  mV p-p



## (10) Eject the alignment tape CR5-2A/CR5-2A PS.

### 13. RF Envelope Adjustment

Measuring equipment: Oscilloscope

- (1) Connect and set the oscilloscope as follows:

CH-1: TP203/DM-89(G-7), DC 500 mV/DIV, 5 ms/DIV, GND: E902/DM-89(G-7)

CH-2: TP4/DM-89(E-1), DC 1 V/DIV, GND: E702/DM-89(D-1)

Trigger: CH-2, – slope

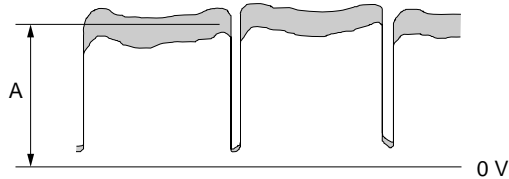
- (2) Y adjustment

Playback the flat filed signal portion (24:00 to 26:00) of the alignment tape CR5-1B or CR5-1B PS, and perform the adjustment.

(DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)

Adjustment point: ●RV205/DM-89(G-6)

Specification:  $A = 2.0 \pm 0.2$  V dc



- (3) Change the connection of the oscilloscope as follows:

CH-1: TP403/DM-89(D-6), GND: E303/DM-89(B-1)

CH-2: TP5/DM-89(D-1), GND: E702/DM-89(D-1)

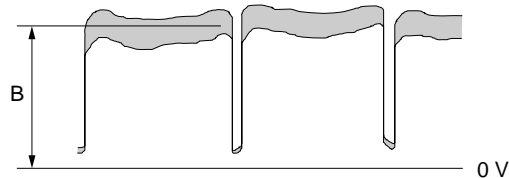
- (4) C adjustment

Playback the flat filed signal portion (24:00 to 26:00) of the alignment tape CR5-1B or CR5-1B PS, and perform the adjustment.

(DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)

Adjustment point: ●RV405/DM-89(C-6)

Specification:  $B = 2.0 \pm 0.2$  V dc



- (5) Stop the playback of the alignment tape CR5-1B/CR5-1B PS or eject it.

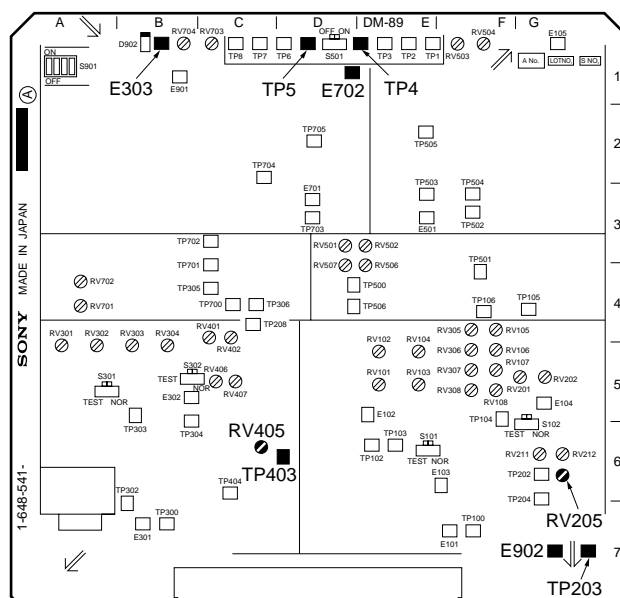
**Note**

It is not necessary to eject the alignment tape when perform subsequent “14. Search Picture Adjustment”.



- | Item of A36 : DM VR 5 | Setting data |
|-----------------------|--------------|
| ENV-TH-H              | 20           |
| ENV-TH-L              | 10           |

- (8) To exit A36 : DM VR 5, press the MENU button once.
- (9) Data save  
Enter A3F : NV-RAM CONTROL, execute “SAVE ALL ADJUST DATA”.
- (10) Check that the message “Save Complete” is displayed on the video monitor.
- (11) To exit A3F : NV-RAM CONTROL, press the MENU button once.



## DM-89 Board (Side A)

## 14. Search Picture Adjustment

Measuring equipment: Digital voltmeter and Oscilloscope

### (1) Voltage measurement

Playback the color-bar signal portion (14:00 to 17:00) of the alignment tape CR5-1B or CR5-1B PS, and measure the DC voltage level at the following measurement points using the digital voltmeter.  
(DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)

Measurement point	Measuring value (fill up)
TP500/DM-89(D-4)	
TP502/DM-89(F-3)	
TP702/DM-89(C-3)	

(2) Turn RV507/DM-89(D-4) fully clockwise ( $\odot$ ).

(3) Short-circuit TP506/DM-89(D-4) and E501/DM-89(E-3) with a shorting clip.

(4) Short-circuit TP700/DM-89(C-4) and E701/DM-89(D-3) with a shorting clip.

### (5) Voltage adjustment

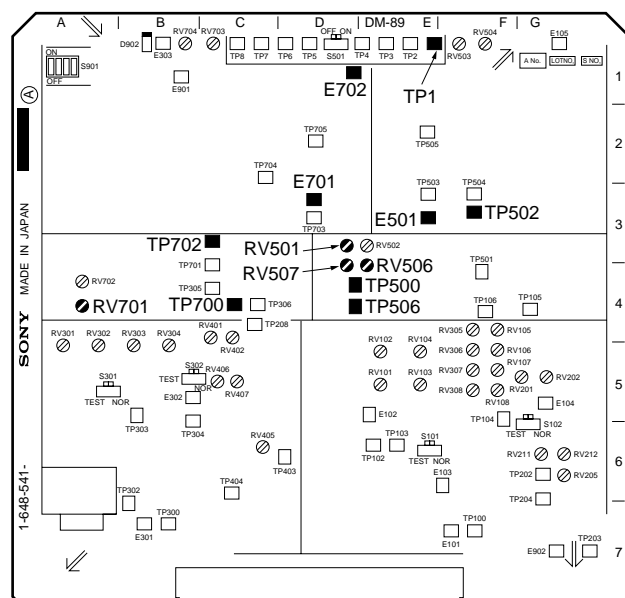
Playback the color-bar signal portion (14:00 to 17:00) of the alignment tape CR5-1B or CR5-1B PS, and adjust the DC voltage level at the following measurement points using the digital voltmeter as identical to the measured voltage in step (1).

(DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)

Measurement point	Adjustment point	Note
TP500/DM-89(D-4)	⌚RV506/DM-89(E-4)	SPD OFFSET
TP502/DM-89(F-3)	⌚RV501/DM-89(D-3)	Y DEEM
TP702/DM-89(C-3)	⌚RV701/DM-89(A-4)	C DEEM

(6) Disconnect the shorting clip from TP506/DM-89(D-4) and E501/DM-89(E-3).

(7) Disconnect the shorting clip from TP700/DM-89(C-4) and E701/DM-89(D-3).



## DM-89 Board (Side A)

- (8) Connect and set the oscilloscope as follows:

CH-1: TP1/DM-89(E-1), DC 1 V/DIV, 10  $\mu$ s/DIV, GND: E702/DM-89(D-1)

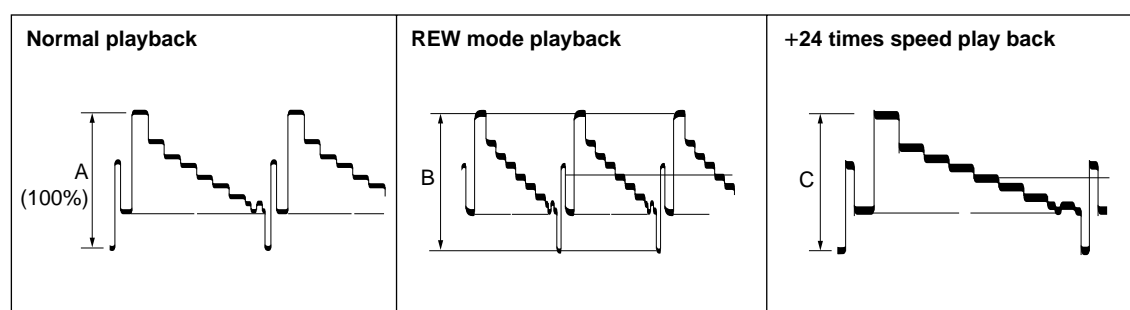
- (9) Gain adjustment

Playback the color-bar signal portion (14:00 to 17:00) of the alignment tape CR5-1B or CR5-1B PS in the following modes, and perform the adjustment and check.

(DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)

#### For DNW-A100/A50/A45

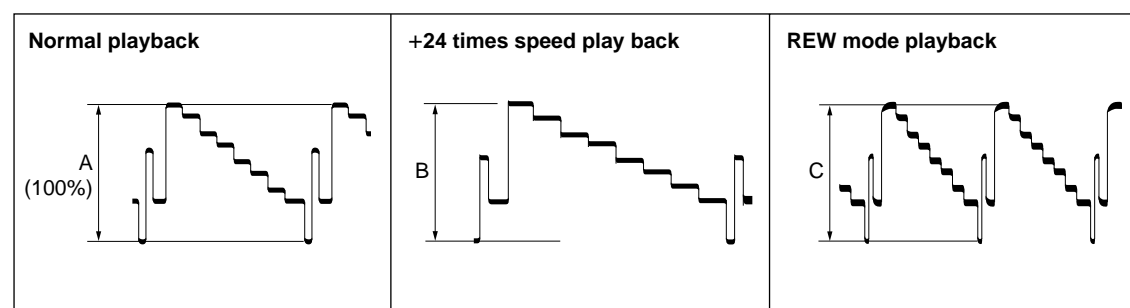
Playback mode	Specification	Adjustment point
Normal	Reference A: 100% (0 dB)	—
REW	B = $100 \pm 3$ % (0 $\pm$ 0.2 dB)	RV507/DM-89(D-4)
+24 times speed	C = $100 \pm 10$ % (0 $\pm$ 1.0 dB)	Check only



DNW-A100/A50/A45

#### For DNW-A100P/A50P/A45P

Playback mode	Specification	Adjustment point
Normal	Reference A: 100% (0 dB)	—
+24 times speed	B = $105 \pm 5$ % (0.4 $\pm$ 0.4 dB)	RV507/DM-89(D-4)
REW	C = $100 \pm 10$ % (0 $\pm$ 1.0 dB)	Check only



DNW-A100P/A50P/A45P

- (10) Stop the playback of the alignment tape CR5-1B/CR5-1B PS or eject it.

#### Note

It is not necessary to eject the alignment tape when perform subsequent “15. Guard Band Width Adjustment”.

## 15. Guard Band Width Adjustment

Measuring equipment: Video monitor

- (1) Enter A35 : DM VR 4 of the maintenance mode
- (2) Confirm the setting data of following items of A35 : DM VR 4.

**Note**

Some setting data are different according to the board number suffix (XX of 1-648-541-XX) of DM-89 board.

Item of A35 : DM VR 4	Setting data for DNW-A100/A50/A45		Setting data for DNW-A100P/A50P/A45P	
	Suffix-13	Suffix-14 and higher	Suffix-13	Suffix-14 and higher
GUARD BAND METAL-Y	38	1D	29	27
GUARD BAND METAL-C	21	1C	16	23
GUARD BAND OXIDE-Y	48	32	3B	2F
GUARD BAND OXIDE-C	30	31	16	29

- (3) Playback the color-bar signal portion (14:00 to 17:00) of the alignment tape CR5-1B or CR5-1B PS in the JOG mode. (DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)
- (4) Turn the search dial until guard band appears at the center on the video monitor screen.  
(See Figure 1 on next page.)
- (5) METAL, Guard band width confirmation  
Confirm the following specifications.  
If both are satisfied, go to step (8). If not, perform step (6) or (7).  
Specification 1: Guard band width is below a third of video display screen's height.  
Specification 2: Guard band width of C side > Guard band width of Y side
- (6) If the specification 1 is not satisfied:  
Subtract 1 from each data value of GUARD BAND METAL-Y and GUARD BAND METAL-C, then perform the confirmation of step (5) again.
- (7) If the specification 2 is not satisfied:  
Add 1 to the data value of GUARD BAND METAL-C, then perform the confirmation of step (5) again.
- (8) METAL C confirmation  
Playback the color-bar signal portion (14:00 to 17:00) of the alignment tape CR5-1B or CR5-1B PS in the VARIABLE +1 time speed mode (or the search +1 time speed), and confirm the following specification. If satisfied, go to step (10). If not, perform step (9).  
(DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)  
Specification 3: The picture (color-bar) on the video monitor is colored.  
(The C signal is not fully muted.)
- (9) If the specification 3 is not satisfied:  
Subtract 1 from the data value of GUARD BAND METAL-C, then perform the confirmation of step (8) again.
- (10) Eject the alignment tape CR5-1B/CR5-1B PS.

- (11) Playback the 75% color-bar signal portion (0:00 to 3:00) of the alignment tape CR5-2A or CR5-2A PS in the JOG mode. (DNW-A100/A50/A45: CR5-2A, DNW-A100P/A50P/A45P: CR5-2A PS)
- (12) Turn the search dial until guard band appears at the center on the video monitor screen.  
(See Figure 1.)
- (13) OXIDE, Guard band width confirmation  
Confirm the following specifications.  
If both are satisfied, go to step (16). If not, perform step (14) or (15).  
Specification 1: Guard band width is below a half of video display screen's height.  
Specification 2: Guard band width of C side > Guard band width of Y side
- (14) If the specification 1 is not satisfied:  
Subtract 1 from each data value of GUARD BAND OXIDE-Y and GUARD BAND OXIDE-C, then perform the confirmation of step (13) again.
- (15) If the specification 2 is not satisfied:  
Add 1 to the data value of GUARD BAND OXIDE-C, then perform the confirmation of step (13) again.
- (16) OXIDE C confirmation  
Playback the 75% color-bar signal portion (0:00 to 3:00) of the alignment tape CR5-2A or CR5-2A PS in the VARIABLE +1 time speed mode (or the search +1 time speed), and confirm the following specification. If satisfied, go to step (18). If not, perform step (17).  
(DNW-A100/A50/A45: CR5-2A, DNW-A100P/A50P/A45P: CR5-2A PS)  
Specification 3: The picture (color-bar) on the video monitor is colored.  
(The C signal is not fully muted.)
- (17) If the specification 3 is not satisfied:  
Subtract 1 from the data value of GUARD BAND OXIDE-C, then perform the confirmation of step (16) again.
- (18) Eject the alignment tape CR5-2A/CR5-2A PS.
- (19) To exit A35 : DM VR 4, press the MENU button once.
- (20) Data save  
Enter A3F : NV-RAM CONTROL of the maintenance mode, execute "SAVE ALL ADJUST DATA".
- (21) Check that the message "Save Complete" is displayed on the video monitor.
- (22) To exit A3F : NV-RAM CONTROL, press the MENU button once.
- (23) To exit the maintenance mode, press the MENU button three time again.

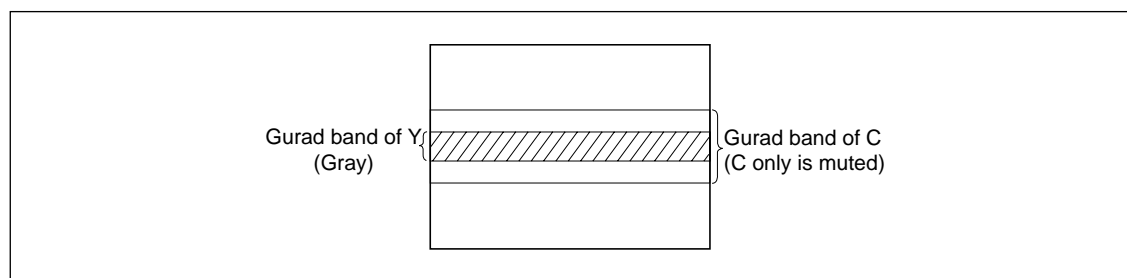


Figure 1. Guard Band

**Note**

The menu of the maintenance mode is superimposed on picture on the video monitor in fact.  
If the superimposed picture obstructs the maintenance operation, set the CHARACTER switch on the sub control panel to OFF. (Be sure to return it to ON after the maintenance operation is completed.)

16. Component Output Level (Betacam) Adjustment

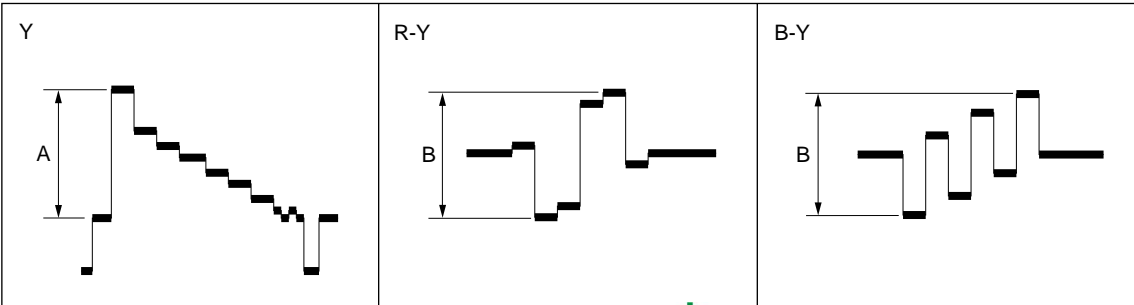
Measuring equipment: Component waveform monitor (terminated with 75 Ω)

(1) METAL Y/C adjustment

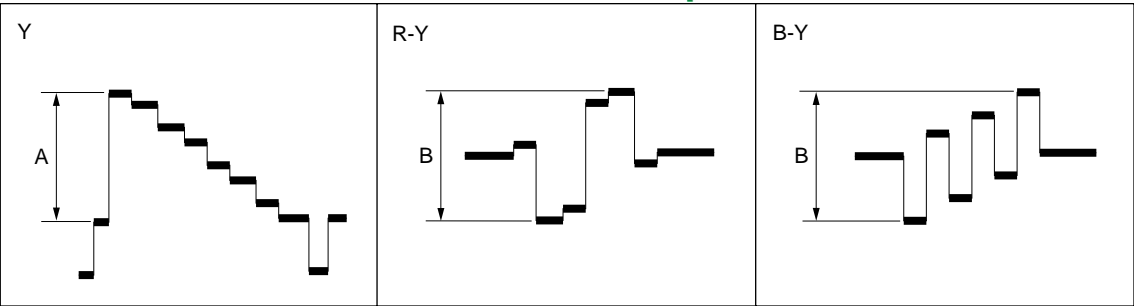
Playback the color-bar signal portion (14:00 to 17:00) of the alignment tape CR5-1B or CR5-1B PS, and perform the adjustment of each component signal level.

(DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)

Observation component	Specifications for DNW-A100/A50/A45	Specifications for DNW-A100P/A50P/A45P	Adjustment point
Y	A = 714 ± 7 mV (100 ± 1 IRE)	A = 700 ± 7 mV	RV101/TBC-24(F-1)
R-Y/B-Y	B = 700 ± 7 mV p-p	B = 700 ± 7 mV p-p	RV201/TBC-24(A/B-1)

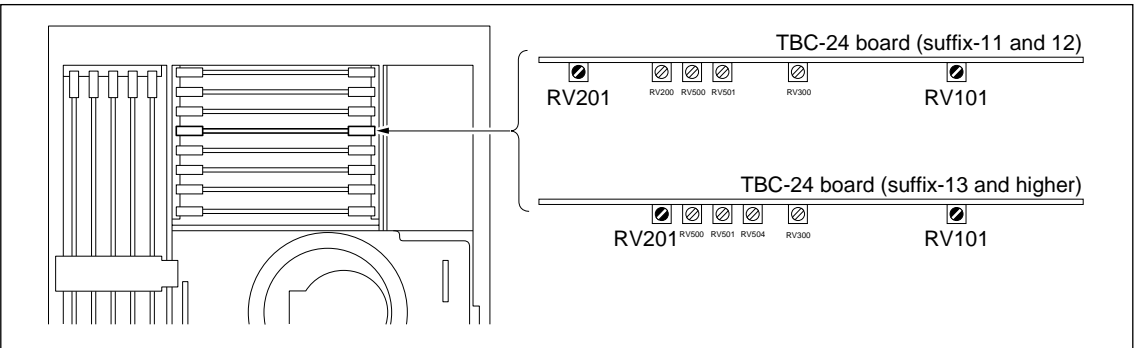


DNW-A100/A50/A45



DNW-A100P/A50P/A45P

(2) Eject the alignment tape CR5-1B/CR5-1B PS.



RV101 and RV201 on TBC-24 Board

Note

RV101 and RV201 on TBC-24 board are possible to adjust without using the extension board.



## 6-5. EQ-56 Board Replacement

The electrical adjustments are essential after the EQ-56 board is replaced.

To perform the electrical adjustments, the following equipment and fixtures are required.

- Oscilloscope: TEKTRONIX 2465B or equivalent
- Composite video monitor (to display of the maintenance mode)
- Extension board: EX-377 (SONY part No. J-6269-810-A) (for DM-89 board)
- Alignment tapes
  - For DNW-A100/A50/A45: SR5-1 (SONY part No. 8-960-075-01),  
CR5-1B (SONY part No. 8-960-096-41), and  
CR5-2A (SONY part No. 8-960-097-44)
  - For DNW-A100P/A50P/A45P: SR5-1P (SONY part No. 8-960-075-51)  
CR5-1B PS (SONY part No. 8-960-096-91), and  
CR5-2A PS (SONY part No. 8-960-098-44)
- Recording tape: BCT-SX series (Betacam SX cassette: SONY standard products)

### Note

Use the virgin tape or no recorded tape for recording tape that is used during the adjustment of the EQ-56 board.

### 6-5-1. Replacement Procedure

#### Note

Turn off the POWER switch before starting the replacement.

- (1) Remove the upper lid, board retainer (S), and EQ-56 (original) board.  
(Refer to “6-1-3. Plug-in Board Pulling out/Insertion”.)
- (2) Disconnect the harnesses to the EQ-56 (original) board, then connect them to the EQ-56 (new) board.
- (3) Insert the EQ-56 (new) board.  
(Refer to “6-1-3. Plug-in Board Pulling out/Insertion”.)
- (4) Extend the DM-89 board with the EX-377 extension board.
- (5) Clean the video heads.  
(Refer to “5-2-3. Tape Running Surface of Upper Drum and Video Heads Cleaning”.)
- (6) Set the CHARACTER switch on the sub control panel to ON.
- (7) Perform the electrical adjustment (Section 6-5-2).
- (8) Turn off the power, and wait for 30 seconds.
- (9) Remove the adjusted DM-89 board from the extension board, then pull out the extension board.
- (10) Insert the adjusted DM-89 board.
- (11) Reattach the board retainer (S) and upper lid.  
(Refer to “6-1-3. Plug-in Board Pulling out/Insertion”.)
- (12) Return the CHARACTER switch state to previous state.



## 6-5-2. Electrical Adjustments

### Adjustment Items

No.	Item	Adjustment point	Notes
0	Preparation		
1	All RF system adjustment		
	DNW-A100/A100P:	A17 : A10-A16 ALL ADJUST	Automatically adjustment
	DNW-A50/A45/A50P/A45P:	A17 : A11-A16 ALL ADJUST	Automatically adjustment
	Data save	A1F : NV-RAM CONTROL	
2	EQ RF output level adjustment for BETACAM/BETACAM SP PB		
	METAL Y	A30 : EQ VR : RF GAIN METAL-Y-A A30 : EQ VR : RF GAIN METAL-Y-B	TP100/DM-89
	METAL C	A30 : EQ VR : RF GAIN METAL-C-A A30 : EQ VR : RF GAIN METAL-C-B	TP300/DM-89
	OXIDE C	A30 : EQ VR : RF GAIN OXIDE-C-A A30 : EQ VR : RF GAIN OXIDE-C-B	TP300/DM-89
	OXIDE Y	A30 : EQ VR : RF GAIN OXIDE-Y-A A30 : EQ VR : RF GAIN OXIDE-Y-B	TP100/DM-89
	Data save	A3F : NV-RAM CONTROL	

### For Maintenance Mode

The operation of the maintenance mode is described as follows:

#### Entering the maintenance mode

Press S1101(G-1) on the SS-63 board.

#### Shifting to the next menu

- (1) Press the JOG button once to enter the JOG mode.
- (2) To set the cursor (\* mark) to the desired menu (mode), turn the search dial.
- (3) Press the SET button once.

#### Exiting from the current menu (mode)

Press the MENU button once.

#### Note

To exit from the maintenance mode, press the MENU button several times.

#### Changing the data value (for manual adjustment only)

- (1) To set the cursor (\* mark) to the item, turn the search dial.
- (2) Turn the search dial slowly while pressing the JOG button. = **Data value changes.**

REVERSE direction: the data value decreases (FF follows 00)

FORWARD direction: the data value increases (00 follows FF)

#### Note

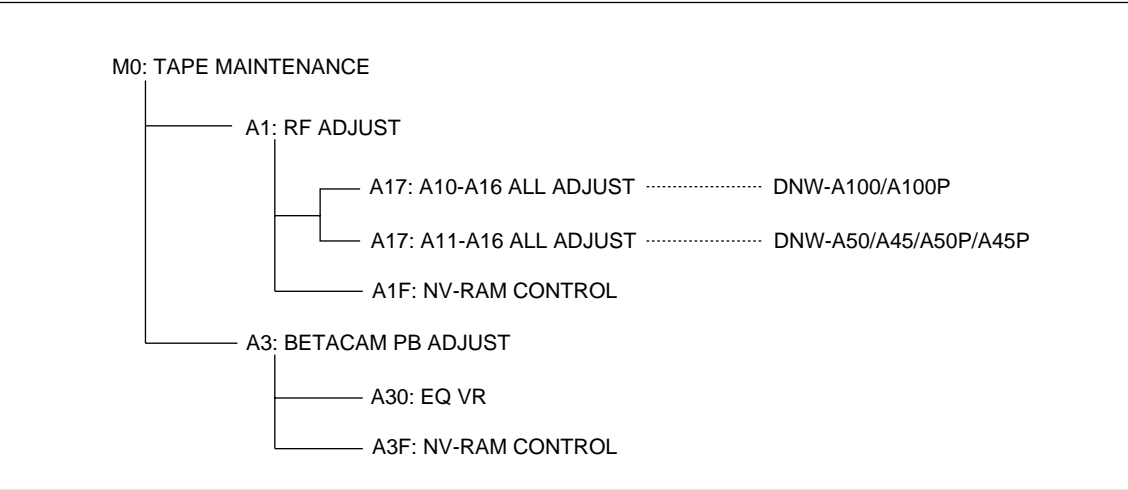
During adjustment, change the rotational direction of the search dial watching to the change of waveform that is displayed on the measuring equipment.

**Saving the data**

- (1) To set the cursor (\* mark) to A?F : NV-RAM CONTROL (A1F or A3F), turn the search dial.
- (2) Press the SET button once.
- (3) To set the cursor (\* mark) to “SAVE ALL ADJUST DATA”, turn the search dial.
- (4) Press the SET button once.

**Note**

The sub modes and menus of the maintenance mode that are used after replacing the EQ-56 board are as shown below.



**0. Preparation**

- (1) Connect the video monitor to the VIDEO OUTPUT COMPOSITE 3 (SUPER) connector.
- (2) Wait for more than 20 minutes after turning on the power.

## 1. All RF System Adjustment

- (1) Insert the alignment tape SR5-1/SR5-1P, then search the alignment tape 00:01:00 in time code.  
(DNW-A100/A50/A45: SR5-1, DNW-A100P/A50P/A45P: SR5-1P)
- (2) To enter the maintenance mode, push S1101 (G-1) on the SS-63 board.
- (3) Enter A17 : A10-A16 ALL ADJUST (A11-A16 ALL ADJUST) in the maintenance mode.
  - Displays “Auto Adjust (Push SET)” on the video monitor.
- (4) Press the SET button on the lower control panel.
  - Starts the automatically adjustment for PB mode.
  - Displays “Set a blank tape and press SET button for REC CURRENT adjustment” on the video monitor after the automatically adjustment is completed.
- (5) Press the SET button.
  - Displays “Insert Blank Tape” on the video monitor, then ejects the alignment tape.
- (6) Take out the alignment tape SR5-1/SR5-1P.
- (7) Insert a recording SX tape.
  - Starts the automatically adjustment for recording current.
  - Displays “Auto Adjust Complete” on the video monitor after the automatically adjustment for recording current is completed.
- (8) To exist the maintenance mode, press the MENU button four times on the lower control panel.
- (9) Eject the recording SX tape.
- (10) To enter the maintenance mode again, press S1101 (G-1) on the SS-63 board.
- (11) Enter A1F : NV-RAM CONTROL.
- (12) Execute “SAVE ALL ADJUST DATA”.
  - Displays “Save Complete” on the video monitor after the data save is completed.
- (13) To exist the maintenance mode, press the MENU button four times.

## 2. EQ RF Output Level Adjustment for BETACAM/BETACAM SP PB

Measuring equipment: Oscilloscope (Band width limit: ON)

- (1) To enter the maintenance mode, press S1101 (G-1) of SS-63 board.
- (2) Enter A3 : BETACAM PB ADJUST of the maintenance mode.
- (3) Enter A30 : EQ VR.
- (4) Set the specified data to all items of A30 : EQ VR.

Item of A30 : EQ VR	Setting data for DNW-A100/A50/A45	Setting data for DNW-A100P/A50P/A45P
RF GAIN METAL-Y-A	55	8E
RF GAIN METAL-Y-B	55	8E
RF GAIN METAL-C-A	3F	6C
RF GAIN METAL-C-B	3F	6C
RF GAIN OXIDE-Y-A	72	9C
RF GAIN OXIDE-Y-B	72	9C
RF GAIN OXIDE-C-A	5A	81
RF GAIN OXIDE-C-B	5A	81

- (5) Connect and set the oscilloscope as follows:  
CH-1: TP100/DM-89(F-7), AC 100 mV/DIV, 2 ms/DIV, GND: E101/DM-89(F-7)  
CH-2: TP4/DM-89(E-1), GND: E702/DM-89(D-1), trigger channel
- (6) To perform the alignment tape operation, press the SET button once.
- (7) Playback the flat field signal portion (24:00 to 26:00) of the alignment tape CR5-1B or CR5-1B PS.  
(DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)
- (8) To operate the maintenance mode, press the MENU button once.
- (9) Perform the METAL Y adjustment.

### Note

Adjust respectively for Y-A and Y-B channels.

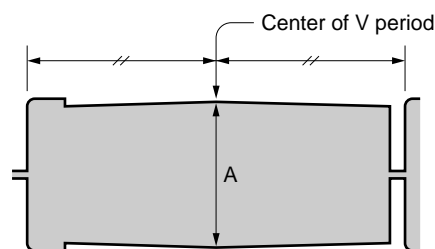
When watching the Y-A channel, set the trigger of oscilloscope to  $-$  slope.

When watching the Y-B channel, set to + slope.

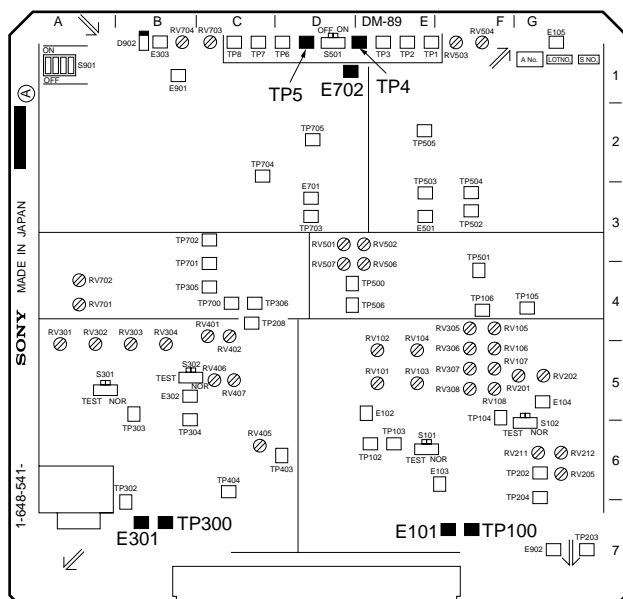
Adjustment points: Y-A channel: A30 : EQ VR : RF GAIN METAL-Y-A

Y-B channel: A30 : EO VR : RF GAIN METAL-Y-B

Specifications (Y-A and Y-B channels):  $A = 380 \pm 20$  mV p-p



- (10) To perform the tape operation, press the SET button once.
- (11) Stop the playback of the alignment tape CR5-1B/CR5-1B PS.



## DM-89 Board (Side A)

- (12) Change the connection of the oscilloscope as follows:  
 CH-1: TP300/DM-89(B-7), GND: E301/DM-89(B-7)  
 CH-2: TP5/DM-89(D-1), GND: E702/DM-89(D-1)
- (13) Playback the flat field signal portion (24:00 to 26:00) of the alignment tape CR5-1B or CR5-1B PS.  
 (DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)
- (14) To operate the maintenance mode, press the MENU button once.
- (15) Perform the METAL C adjustment.

**Note**

Adjust respectively for C-A and C-B channels.

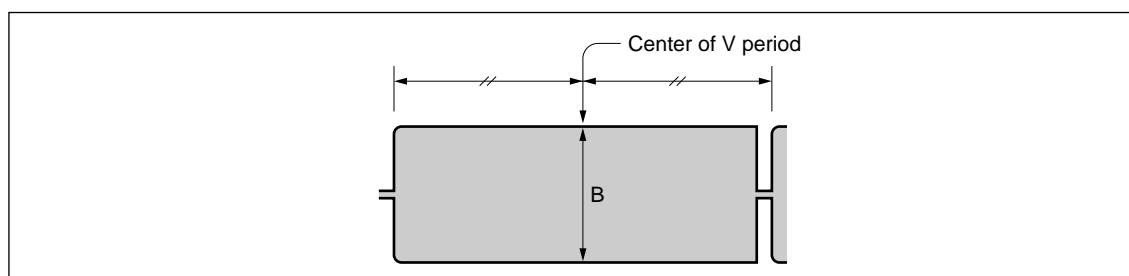
When watching the C-A channel, set the trigger of oscilloscope to  $-$  slope.

When watching the C-B channel, set to  $+$  slope.

Adjustment points: C-A channel: A30 : EQ VR : RF GAIN METAL-C-A

C-B channel: A30 : EQ VR : RF GAIN METAL-C-B

Specifications (C-A and C-B channels):  $B = 380 \pm 20$  mV p-p



- (16) To perform the tape operation, press the SET button once.
- (17) Stop the playback of the alignment tape CR5-1B/CR5-1B PS, and eject it.
- (18) Playback the 75 % color-bar signal portion (0:00 to 3:00) of the alignment tape CR5-2A or CR5-2A PS.  
 (DNW-A100/A50/A45: CR5-2A, DNW-A100P/A50P/A45P: CR5-2A PS)
- (19) To operate the maintenance mode, press the MENU button once.
- (20) Perform the OXIDE C adjustment.

**Note**

Adjust respectively for C-A and C-B channels.

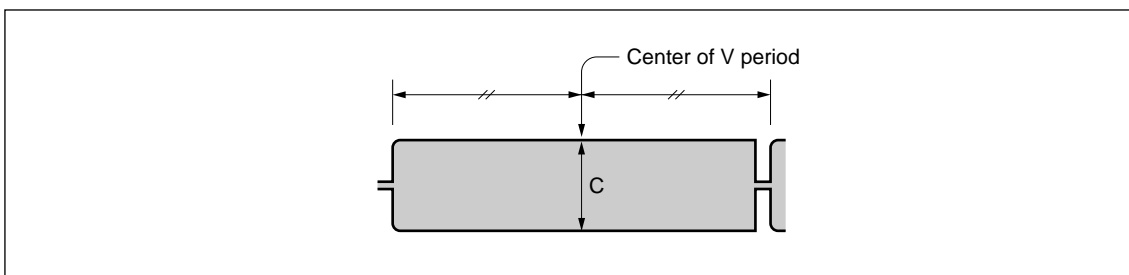
When watching the C-A channel, set the trigger of oscilloscope to  $-$  slope.

When watching the C-B channel, set to  $+$  slope.

Adjustment points: C-A channel: A30 : EQ VR : RF GAIN OXIDE-C-A

C-B channel: A30 : EQ VR : RF GAIN OXIDE-C-B

Specifications (C-A and C-B channels):  $C = 250 \pm 20$  mV p-p



- (21) To perform the tape operation, press the SET button once.
- (22) Stop the playback of the alignment tape CR5-2A/CR5-2A PS.

- (23) Change the connection of the oscilloscope as follows:  
CH-1: TP100/DM-89(F-7), GND: E101/DM-89(F-7)  
CH-2: TP4/DM-89(E-1), GND: E702/DM-89(D-1)
- (24) Playback the 75 % color-bar signal portion (0:00 to 3:00) of the alignment tape CR5-2A or CR5-2A PS. (DNW-A100/A50/A45: CR5-2A, DNW-A100P/A50P/A45P: CR5-2A PS)
- (25) To operate the maintenance mode, press the MENU button once.
- (26) Perform the OXIDE Y adjustment.

### Note

Adjust respectively for Y-A and Y-B channels.

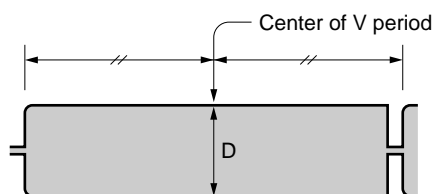
When watching the Y-A channel, set the trigger of oscilloscope to  $-$  slope.

When watching the Y-B channel, set to + slope.

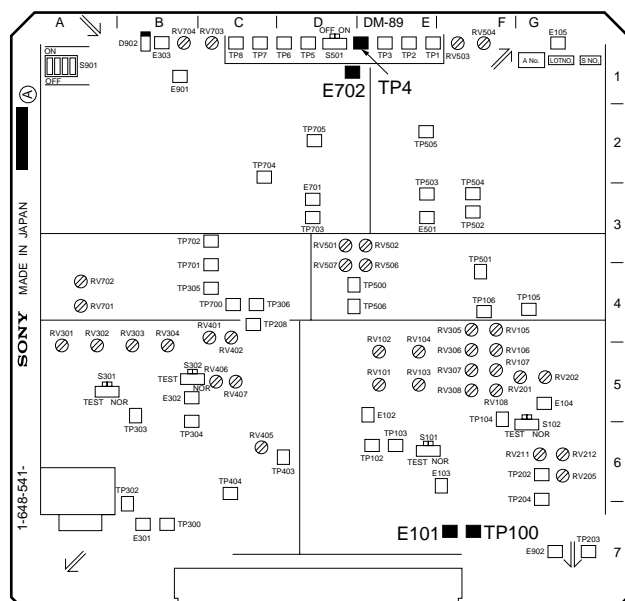
Adjustment points: Y-A channel: A30 : EQ VR : RF GAIN OXIDE-Y-A

Y-B channel: A30 : EO VR : RF GAIN OXIDE-Y-B

Specifications (Y-A and Y-B channels):  $D = 250 \pm 20$  mV p-p



- (27) To perform the tape operation, press the SET button once.
- (28) Stop the playback of the alignment tape CR5-2A/CR5-2A PS, and eject it.
- (29) To operate the maintenance mode, press the MENU button once.
- (30) To exit A30 : EQ VR, press the MENU button once again.
- (31) Data save  
Enter A3F : NV-RAM CONTROL, then execute "SAVE ALL ADJUST DATA".
- (32) Check that the message "Save Complete" is displayed on the video monitor.
- (33) To exit the maintenance mode, press the MENU button four times.



## DM-89 Board (Side A)

## 6-6. SS-63 Board Replacement

For the board replacement, refer to “6-1-3. Pulling out/ Insertion of Plug-in Board”.

However, the following service operations are required in before and after the SS-63 board replacement.

### Before replacement

- Check the setting of setup menu (Main menu and Extended menu of 525/60 and 625/50 systems)  
Record the setting of setup menu to a copy of the setting check sheet in Appendix B, if possible.
- Setting of the DIP switches  
Set the DIP switches (S101, S1100, S1102, and S1900) according to the model.  
Refer to Section 6-6-1 for detail.

### After replacement

- Setting of setup menu (Main menu and Extended menu of 525/60 and 625/50 systems)  
Reset the setup menu as recorded setting on the setting check sheet (copy).
- Error logging data clear and Calendar/Clock setting  
There is a possibility that the SS-63 board to be installed has the another error logging data in its NV-RAM. Therefore, clear the error logging data.  
And, the calendar/clock are required to indicate of the day and time at error occurrence. There is a possibility that the date and time are wrong. Set the calendar/clock to the correct day and time.  
Refer to Section 6-6-2 for detail.

#### Note




The NV-RAM on the SS-63 board has the calendar and clock data.

## 6-6-1. Setting of DIP Switches

### Notes

- The “■” mark shows the knob position.
- For detailed description of each DIP switch, refer to Section 1-10-5.

- (1) Confirm that the DIP switches S101 (A-1), S1100 (J-1), and S1900 (P-1) are following settings.

Ref. No.	Setting	Remakes
S101		This setting is the factory setting.
S1100		See below notes.
S1900		All OFF













### Notes

- After completing the setting of setup menu, be sure to set the switch No. 1 of S1100 to identical setting as the SS-63 board that is removed.
- Be sure to set the switch No. 2 of S1100 to identical setting as the SS-63 board that is removed.

- (2) Setting the DIP switch S1102 (F-2) as follows:

### Notes

- Setting is different according to the model.
- Numbers of S1102's switches are different according to board number suffix. Be sure to confirm the suffix of board number. The board number is indicated on the left margin (A-6) of side A.

Model	For suffix-11 and 12	For suffix-13 and higher
DNW-A100		
DNW-A50		
DNW-A45		
DNW-A100P		
DNW-A50P		
DNW-A45P		

## 6-6-2. Error Logging Data Clear and Calendar/Clock Setting

Clear the another error logging data in NV-RAM on the SS-63 board that is installed, and set the calendar/clock to the correct day and time.

Clear and set the data as follows after entering the error logger display mode.

- (1) Enter the error logger display mode.

### Notes

- There are two ways to entering the error logger display mode.
  1. Press the MENU button once while pressing the ENTRY button on lower control panel.
  2. Enter the maintenance mode, then enter M2 : ERROR LOGGER.
- Contents of the error logger are superimposed on the video monitor connected to the VIDEO OUTPUT COMPOSITE 3 (SUPER) connector.

### Error logging data clear [step (2)]

- (2) Press the RESET button once on the lower control panel while pressing the STOP button.

### Calendar/Clock setting [steps (3) through (8)]

- (3) Press the SET button once on the lower control panel while pressing the STOP button.

### Note

After pressing the SET button once, displays the setting menu on lower half part of the superimposed screen, and cursor (\* mark) moves to the setting menu.

- (4) Turn the search dial to FORWARD direction (↻) until the value for year on last line (calendar and clock) blinks.



### Note

The \* mark is not displayed on the line of the calendar and clock.

- (5) Blink the value of changing (setting) item (year, month, day, hour, minute, or second) by turning the search dial.
- (6) Change its item to a desired value by turning the search dial while pressing the JOG button on the lower control panel.

### Notes

- Change the value, then displays message “Push SET button”.  
And stops a step forward of the calendar/clock.
- If canceling that setting (return to previous value), don't press the SET button, press the MENU button.

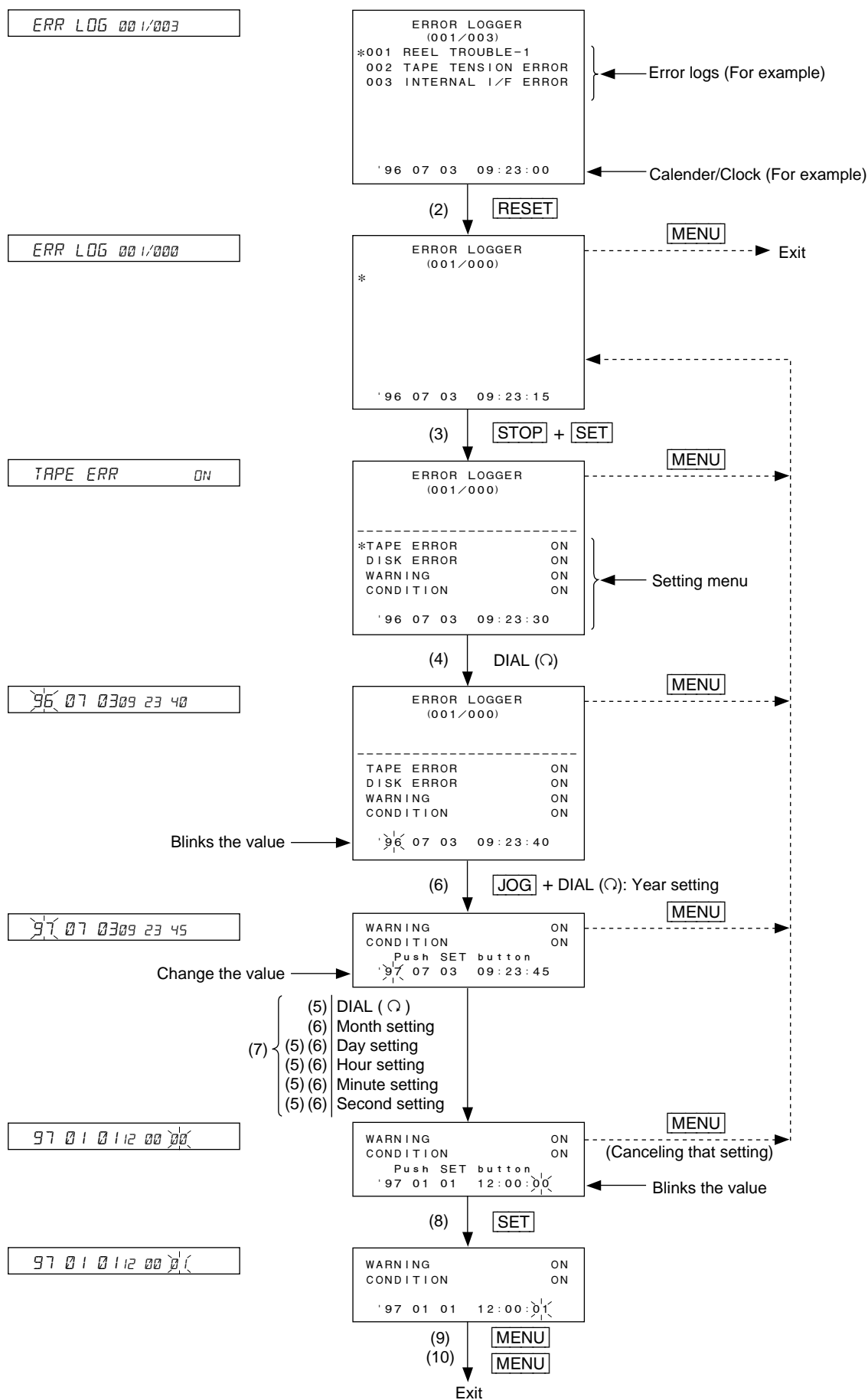
When pressing the MENU button once, exits the setting menu.

- (7) Repeat steps (5) and (6) until changing the all values of the requisite items.
- (8) To save the setting, press the SET button once on the lower control panel.
- (9) Press the MENU button once to exit the setting menu.
- (10) To exit the error logger display mode, press the MENU button once again.

### Note

When entering the error logger display mode from the maintenance mode, returns the maintenance mode screen. Exits the maintenance mode by pressing the MENU button once again.





## 6-7. TBC-23 Board Replacement

The electrical adjustments are essential after the TBC-23 board is replaced.

To perform the electrical adjustment, the following equipment and fixtures are required.

### Note

The TBC-23 board of the service parts code suffix-A cannot be used to this unit. Be sure to check the suffix of service parts code before replacement. The service parts code is indicated on near the top right corner (F-2) of A side of TBC-23 board.

For the TBC-23 board of the board number 1-648-543-13 or 1-648-543-14, modification is required.

Please consult your local Sony Sales Office/Service Center in detail. The board number is indicated on the left margin (A-6) of A side of TBC-23 board.

- Component video signal generator: TEKTRONIX TSG-300 or equivalent

### Note

It is required that the component video signal generator is able to output the 50% bowtie signal.

- Composite video signal generator
  - For DNW-A100/A50/A45: TEKTRONIX TSG-170A or equivalent
  - For DNW-A100P/A50P/A45P: TEKTRONIX TSG-271 or equivalent
- Component waveform monitor: TEKTRONIX WFM300 or equivalent
- Composite waveform/vector monitor
  - For DNW-A100/A50/A45: TEKTRONIX 1750, 1780R, or equivalent
  - For DNW-A100P/A50P/A45P: TEKTRONIX 1751, 1781R, or equivalent
- VISC phase adjusting tool
  - For DNW-A100P/A50P/A45P only: (SONY part No. J-6332-240-A)
- Composite video monitor
- 75  $\Omega$  terminators (5 pcs.)
- Cleaning tape BCT-5CLN (SONY standard products)
- Alignment tapes
  - For DNW-A100/A50/A45: CR5-1B (SONY part No. 8-960-096-41) and CR5-2A (SONY part No. 8-960-097-44)
  - For DNW-A100P/A50P/A45P: CR5-1B PS (SONY part No. 8-960-096-91) and CR5-2A PS (SONY part No. 8-960-098-44)

### 6-7-1. Replacement Procedure

#### Note

Turn off the POWER switch before starting the replacement.

- (1) Remove the upper lid, board retainer (S), and TBC-23 (original) board.  
(Refer to “6-1-3. Plug-in Board Pulling out/Insertion”.)
- (2) Inserting a new TBC-23 board to the slot for TBC-23 board.
- (3) Connect the one disconnected harness to CN1 on the TBC-23 (new) board.
- (4) Clean the video heads using a cleaning tape. (Refer to “5-2-1. Cleaning using Cleaning Tape”.)
- (5) Perform the electrical adjustments (Section 6-7-2).
- (6) For DNW-A100/A50/A45 only  
Return the ITEM-709 and ITEM-713 of setup extend menu to previous settings after the electrical adjustments are completed.
- (7) Return the states of S1100-1 on the SS-63 board and control panels to their previous states.
- (8) Turn off the power, and wait for 30 seconds.
- (9) Reattach the board retainer (S) and upper lid. (Refer to Section 6-1-3.)

## 6-7-2. Electrical Adjustments

### Adjustment Items

No.	Item	Adjustment point	Notes
0	Preparation		
1	Initial data setting	All items of A37 : TBC VR	
	Data save	A3F : NV-RAM CONTROL	
2	PB video phase confirmation (Note 1)	–	VIDEO OUTPUT COMPONENT Y
		●RV300/TBC-24 A37 : TBC VR : SQ Y RZ (Note 2)	VIDEO OUTPUT COMPONENT
3	TBC Y/C delay confirmation (Note 1)	–	VIDEO OUTPUT COMPONENT Y
	METAL	●RV500/TBC-24 A37 : TBC VR : SQ C RZ (Note 3) ●RV504/TBC-24 (Note 4)	VIDEO OUTPUT COMPONENT
	OXIDE	●RV501/TBC-24	VIDEO OUTPUT COMPONENT
4	VISC phase adjustment	●RV200/TBC-23	VIDEO OUTPUT COMPONENT Y
		A37 : TBC VR : VISC PHASE	VIDEO OUTPUT COMPONENT Y
	Data save	A3F : NV-RAM CONTROL	

Note 1: If the specification is not satisfied, adjust the TBC-24 board.

Note 2: If the specification is not satisfied by RV300/TBC-24, change the data of  
A37: TBC VR: SQ Y RZ.

Note 3: If the specification is not satisfied by RV500/TBC-24, change the data of  
A37: TBC VR: SQ C RZ.

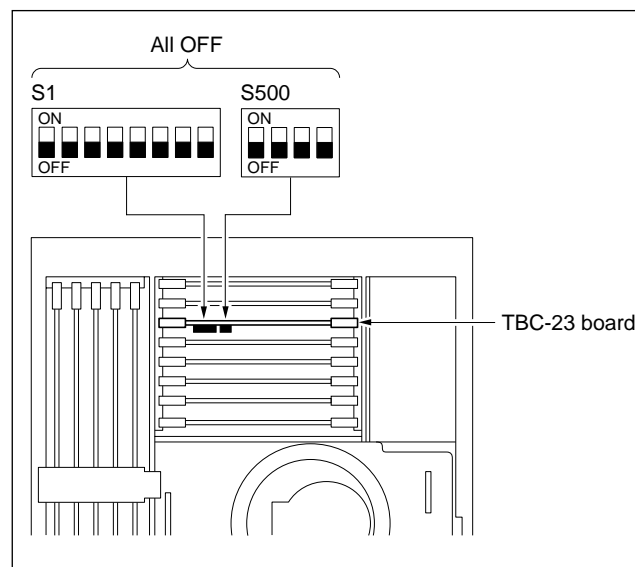
Note 4: This RV504 is not equipped on the TBC-24 board of board number suffixes 11 and 12.

## 0. Preparation

### Setting (Check) of the switches on the TBC-23 board

Confirm that the switches on TBC-23 board are factory settings.

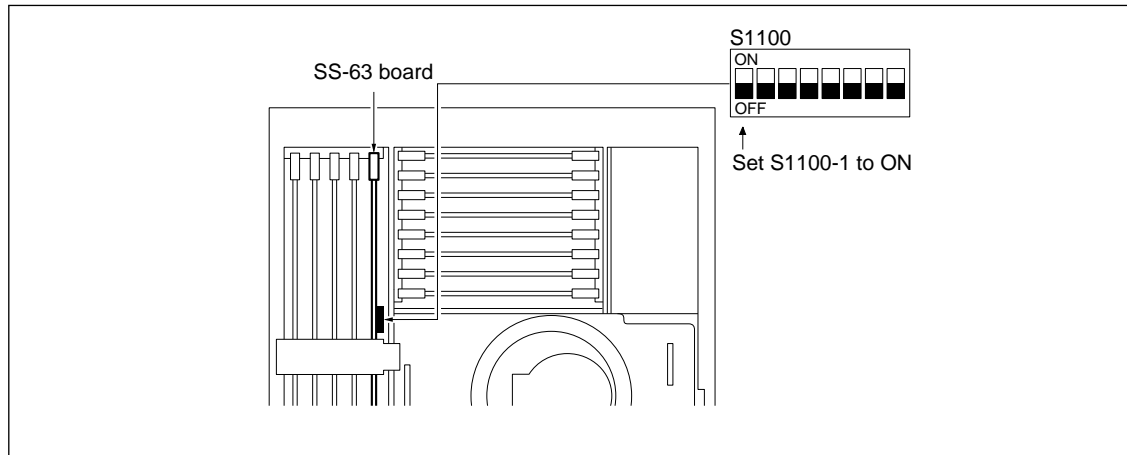
Ref. No.	Switch No.	Factory setting
S1	1	OFF
	2	OFF
	3	OFF
	4	OFF
	5	OFF
	6	OFF
	7	OFF
	8	OFF
S500	1	OFF
	2	OFF
	3	OFF
	4	OFF



S1 and S500 on TBC-23 Board

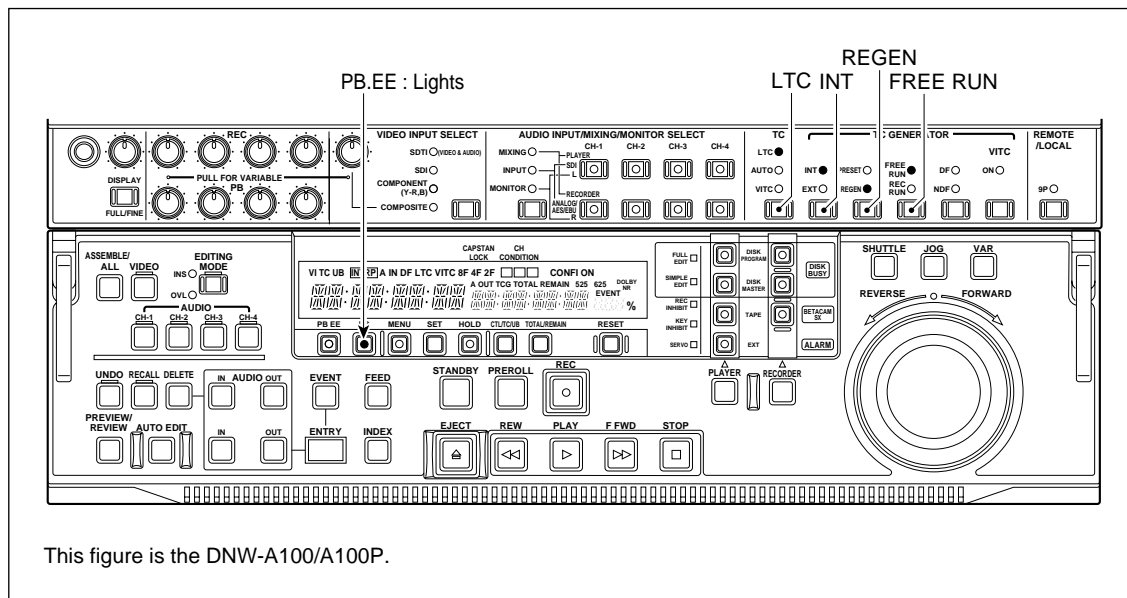
## Setting of DNW

- (1) Set S1100-1 on SS-63 board to ON to treat the extended menu of the setup menu.



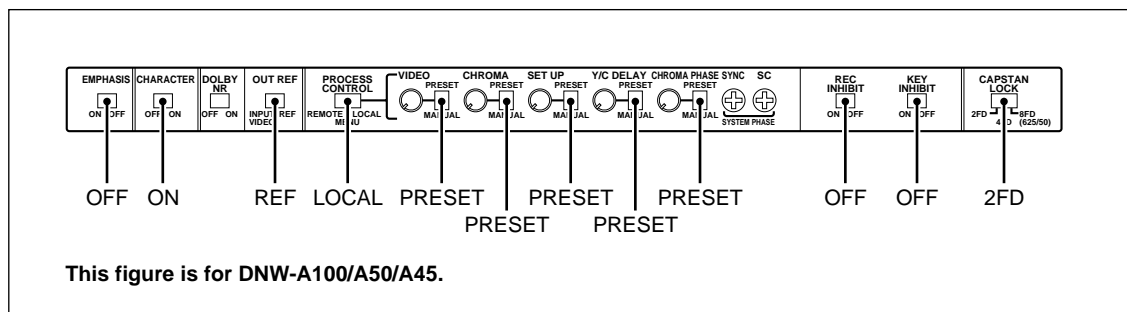
**S1100 on SS-63 Board**

- (2) Turn on the power, and set each control panel as shown below.



This figure is the DNW-A100/A100P.

**Upper/Lower Control Panels**



This figure is for DNW-A100/A50/A45.

**Sub Control Panel**

### (3) Setting of the setup extend menu

- For DNW-A100/A50/A45

Set the SUB-ITEMs of ITEM-709 and ITEM-713 as shown below.

After adjustments are completed, return the SUB-ITEMs to their previous settings.

ITEM	SUB-ITEM	Setting	Previous setting (fill up)
709 : CAV LEVEL FORMAT	1. OUTPUT CAV LEVEL	B-CAM	
713 : VIDEO SETUP REFERENCE LEVEL	0. MASTER LEVEL	0.0%	
	3. BETACAM PB LEVEL	MSTER	
	4. OUTPUT LEVEL	MSTER	

- For DNW-A100P/A50P/A45P  
None.

## For Maintenance Mode

The operation of the maintenance mode is described as follows:

### Notes

The sub mode and menus of the maintenance mode that are used after replacing the TBC-23 board are as shown below.

### • Entering the maintenance mode

- (1) Press S1101 (G-1) on the SS-63 board.

### • Shifting to the next menu (mode)

- (1) Press the JOG button once to enter the JOG mode.
- (2) To set the cursor (\* mark) to the desired menu (mode), turn the search dial.
- (3) Press the SET button once.

```

M0 : TAPE MAINTENANCE
├── A3 : BETACAM PB ADJUST
│   ├── A37 : TBC VR
│   └── A3F : NV-RAM CONTROL

```

### • Exiting from the current menu (mode)

- (1) Press the MENU button once.

### Note

To exit from the maintenance mode, press the MENU button several times.

### • Changing the data value

- (1) To set the cursor (\* mark) to the item, turn the search dial.
- (2) Turn the search dial slowly while pressing the JOG button. = **Data value changes.**  
REVERSE direction: the data value decreases (FF follows 00)  
FORWARD direction: the data value increases (00 follows FF)

### Note

During adjustment, change the rotational direction of the search dial watching to the change of waveform that is displayed on the measuring equipment.

### • Saveing the data

- (1) To set the cursor (\* mark) to A3F : NV-RAM CONTROL, turn the search dial.
- (2) Press the SET button once.
- (3) To set the cursor (\* mark) to “SAVE ALL ADJUST DATA”, turn the search dial.
- (4) Press the SET button once.

## 1. Initial Data Setting

- (1) Enter the maintenance mode, then enter A37 : TBC VR.
- (2) Set the specified data to all items of A37 : TBC VR.

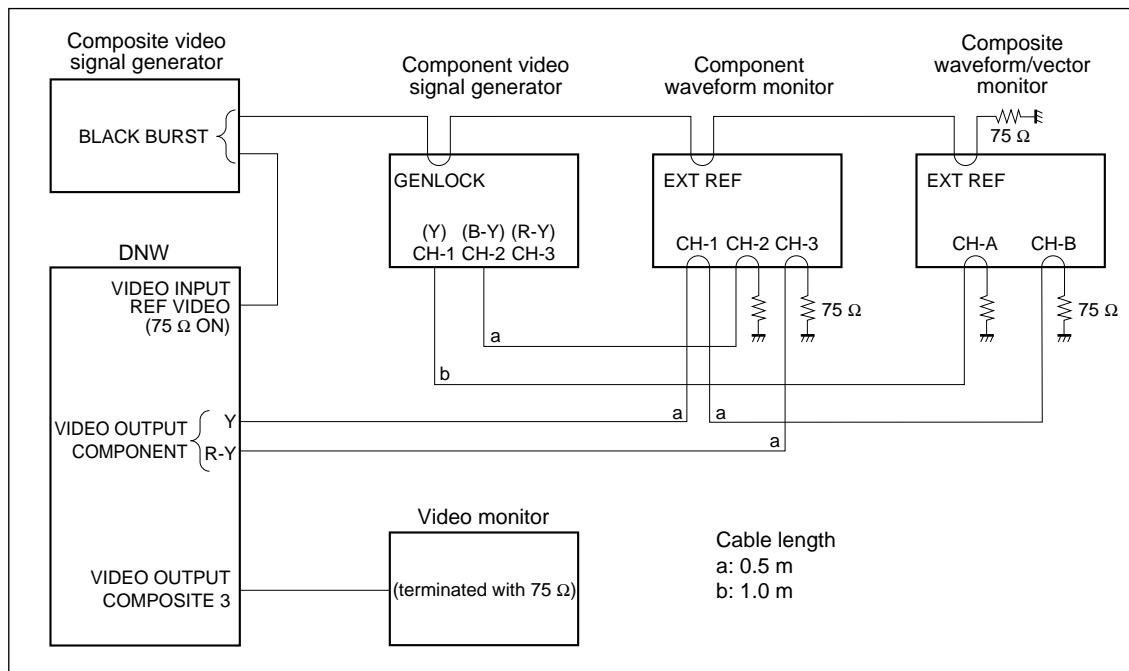
Item of A37 : TBC VR	Setting data for DNW-A100/A50/A45	Setting data for DNW-A100P/A50P/A45P
SQ Y RZ	4C	4B
SQ C RZ	6F	6E
VISC PHASE	06	02

- (3) To exit A37 : TBC VR, press the MENU button once.
- (4) Data save  
Enter A3F : NV-RAM CONTROL of the maintenance mode, then execute "SAVE ALL ADJUST DATA".
- (5) Check that the message "Save Complete" is displayed on the video monitor.
- (6) To exit A3F : NV-RAM CONTROL, press the MENU button once.
- (7) To exit the maintenance mode, press the MENU button three times again.

## 2. PB Video Phase Confirmation

Measuring equipment: Refer to next figure.

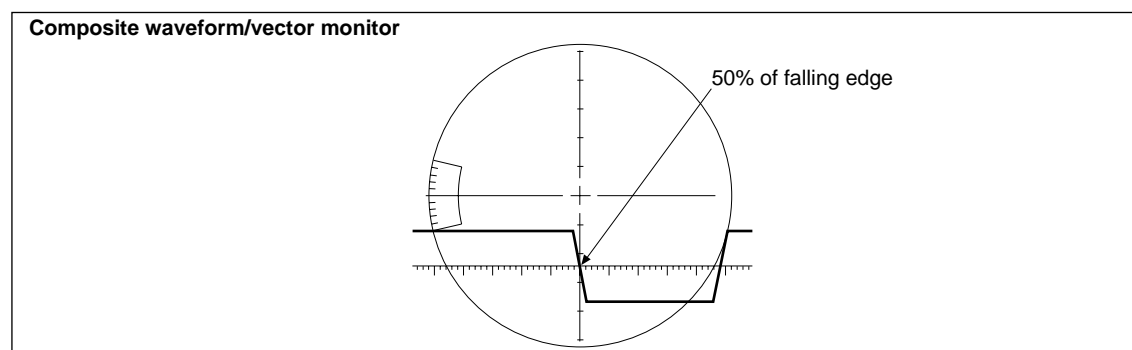
- (1) Connect the video signal generators, measuring equipments, and video monitor as shown below.  
And set the output of the component video signal generator to 50% bowtie signal.



Connection in PB Video Phase Confirmation

**System SYNC position adjustment [to step (6)]**

- (2) Set the composite waveform/vector monitor as follows:  
WAVEFORM mode, SWEEP: 2H, MAG ON, INPUT: CH-A, EXT REF
- (3) Display the H SYNC signal part of CH-A side on the composite waveform/vector monitor, and align 50% position at falling edge readability.  
(See the next figure.)
- (4) Playback the bowtie signal portion (17:00 to 19:00) of the alignment tape CR5-1B or CR5-1B PS.  
(DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)
- (5) Change the observation signal (channel) of the composite waveform/vector monitor from CH-A to CH-B, then adjust the 50% position at falling edge of H SYNC signal of CH-B to the identical position as CH-A using the SYNC control VR on the sub control panel.



- (6) Stop the playback of the alignment tape CR5-1B/CR5-1B PS.

**System SYNC phase adjustment [to step (11)]**

- (7) Set the composite waveform/vector monitor as follows:  
SCH mode, INPUT: CH-A, EXT REF
- (8) Align the SYNC phase of CH-A to 0 degree using PHASE knob of the composite waveform/vector monitor. (See the next figure.)

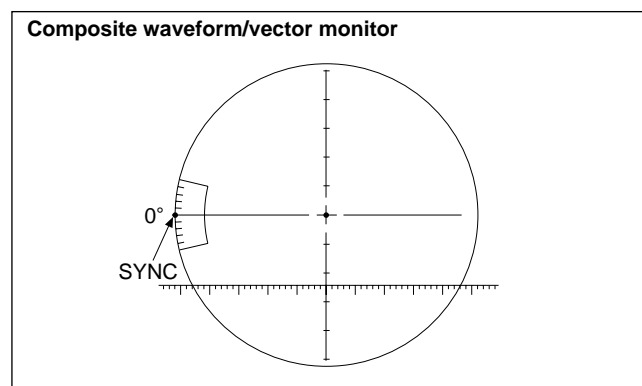
**Note**

Turn the PHASE knob so that the beam spot (SYNC) moves in the shortest route to 0 degree.

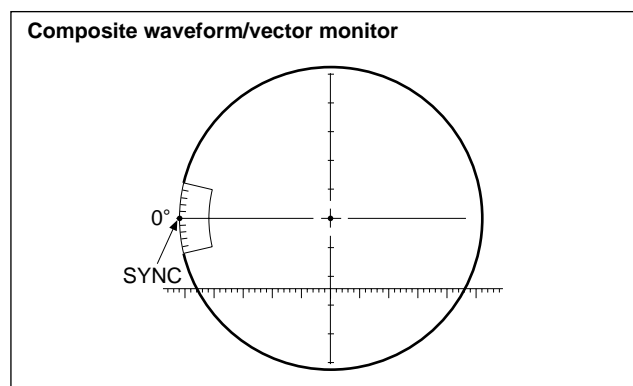
- (9) Playback the bowtie signal portion (17:00 to 19:00) of the alignment tape CR5-1B or CR5-1B PS.  
(DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)
- (10) Change the observation signal (channel) of the composite waveform/vector monitor from CH-A to CH-B, then adjust the SYNC (beam spot) of CH-B to 0 degree (the identical position as CH-A) using the SC control VR on the sub control panel.

**Note**

Turn the SC control VR so that the beam spot (SYNC) moves in the shortest route to 0 degree.



DNW-A100/A50/A45



DNW-A100P/A50P/A45P

(11) Stop the playback of the alignment tape CR5-1B/CR5-1B PS.

### Y phase confirmation [to step (24)]

(12) Set the component waveform monitor to BOWTIE mode.

(13) Playback the bowtie signal portion (17:00 to 19:00) of the alignment tape CR5-1B or CR5-1B PS.  
(DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)

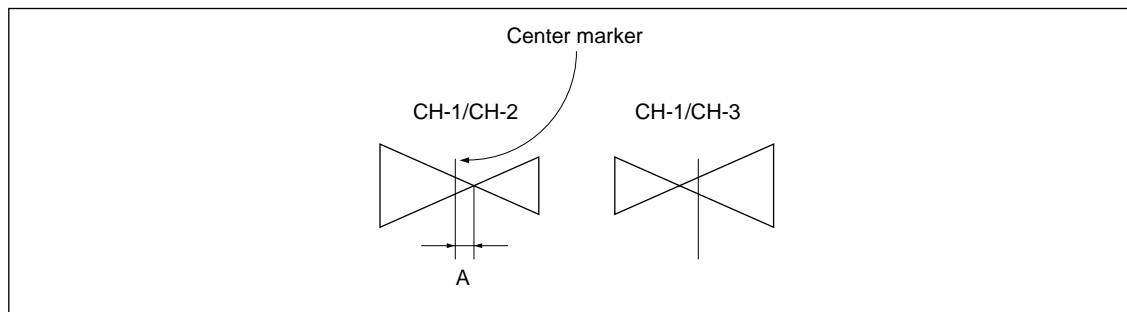
(14) Confirm the deviation A between the center marker and bowtie dip point of CH-1/CH-2 (Y/B-Y).

If the specification is not satisfied, perform the adjustment.

Adjustment point: RV300/TBC-24(D-1)

Specification:  $A = 0 \pm 10$  ns

If the specification is not satisfied by adjustment, perform step (15) through (18) after setting RV300 to the mechanical center.



Perform following steps (15) through (18) only when the specification in step (14) is not satisfied.

(15) Playback the bowtie signal portion (17:00 to 19:00) of the alignment tape CR5-1B or CR5-1B PS again.

(16) Enter the maintenance mode, then enter A37 : TBC VR.

(17) Change the data value of item "SQ Y RZ" within +1 or -1 so that the bowtie dip point moves closer to the center marker.

(18) Perform step (14) again.

### Data save [to step (23)]:

Perform the data save only when SQ Y RZ's data value of A37 : TBC VR is changed.

(19) To exit A37 : TBC VR, press the MENU button on the lower control panel.

(20) Enter A3F : NV-RAM CONTROL, then execute "SAVE ALL ADJUST DATA".

(21) Check that the message "Save Complete" is displayed on the video monitor.

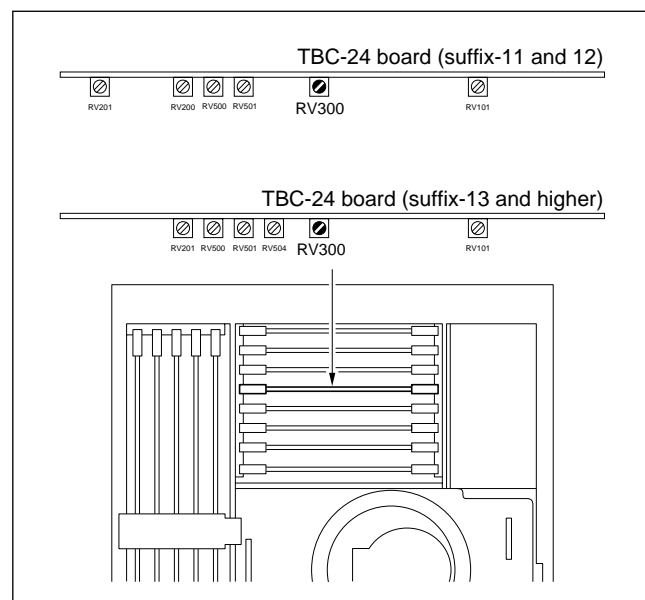
(22) To exit A3F : NV-RAM CONTROL, press the MENU button once.

(23) To exit the maintenance mode, press the MENU button three times again.

(24) Stop the playback of the alignment tape CR5-1B/CR5-1B PS or eject it.

### Note

It is not necessary to eject the alignment tape when perform subsequent "3. TBC Y/C Delay Confirmation".



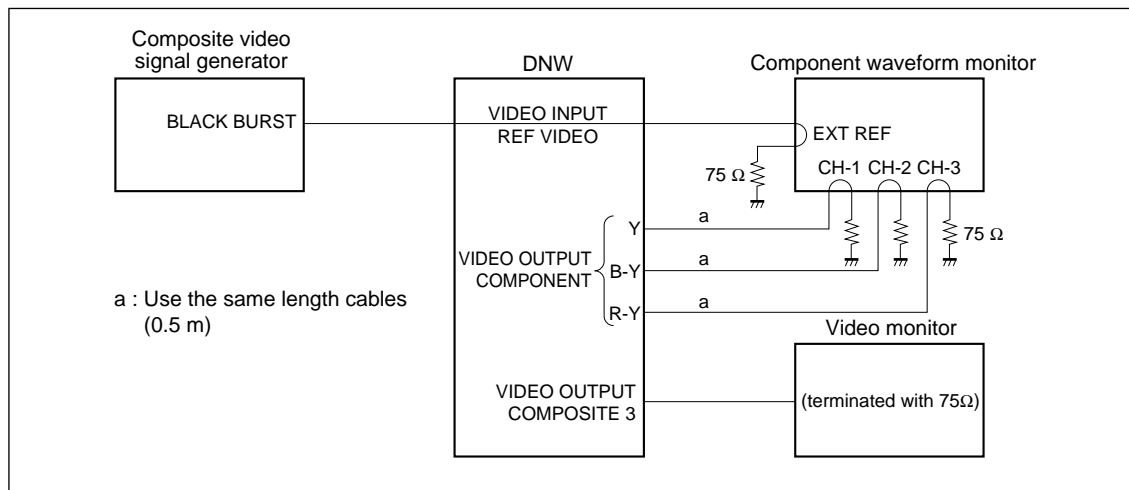
RV300 on TBC-24 Board



### 3. TBC Y/C Delay Confirmation

Measuring equipment: Refer to next figure.

- (1) Connect the video signal generator, measuring equipment, and video monitor as shown below.



Connection in Y/C Delay Confirmation

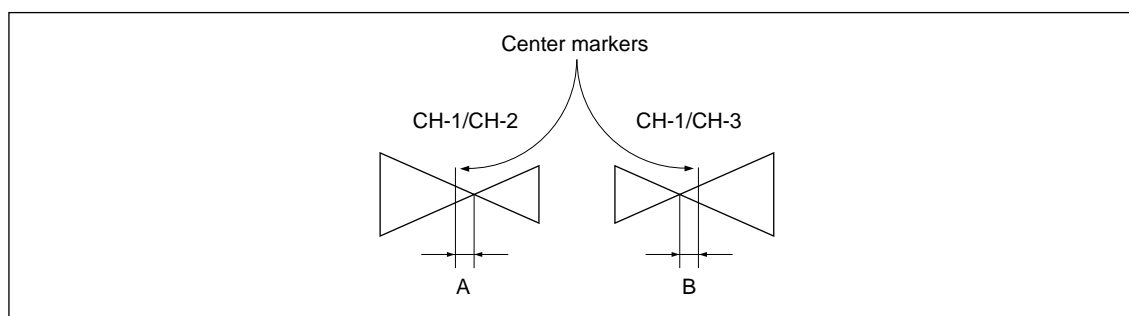
#### C phase confirmation [to step (5)]

- (2) Set the component waveform monitor to BOWTIE mode.  
 (3) Playback the bowtie signal portion (17:00 to 19:00) of the alignment tape CR5-1B or CR5-1B PS.  
 (DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)  
 (4) Confirm the deviations A and B between each center marker and bowtie dip point of CH-1/CH-2 (Y/B-Y) and CH-1/CH-3 (Y/R-Y).

If the specification is not satisfied, perform steps (6) through (20).

Specifications:  $A = 0 \pm 10 \text{ ns}$

$B = 0 \pm 10 \text{ ns}$



- (5) Stop the playback of the alignment tape CR5-1B/CR5-1B PS or eject it.

#### Note

It is not necessary to eject the alignment tape when perform subsequent “4. VISC Phase Adjustment”.

Perform following steps (6) through (20) only when the specification in step (4) is not satisfied.

### METAL adjustment [to step (17)]

(6) Playback the bowtie signal portion (17:00 to 19:00) of the alignment tape CR5-1B or CR5-1B PS.  
(DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)

(7) Adjust the deviations of CH-1/CH-2 (Y/B-Y) and CH-1/CH-3 (Y/R-Y).

Adjustment points: Field 1: ●RV500/TBC-24(B-1)

Field 2: ●RV504/TBC-24(C-1)

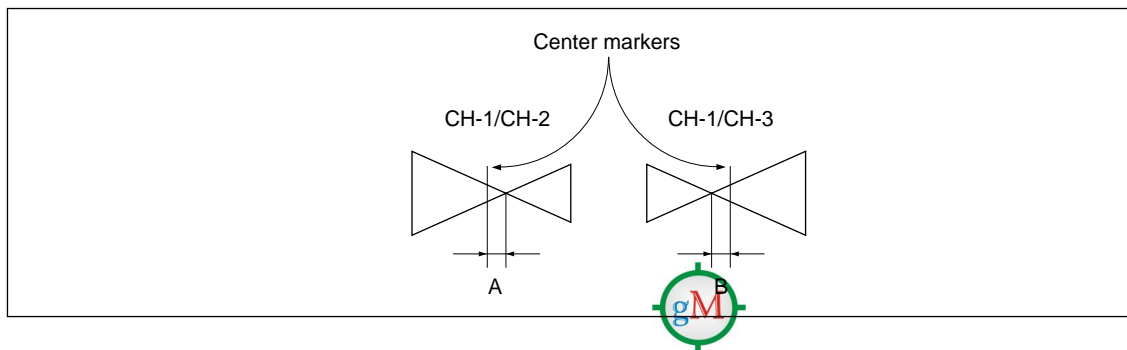
Specifications: A =  $0 \pm 10$  ns

B =  $0 \pm 10$  ns

If the specification is not satisfied by adjusting RV500, perform steps (8) through (11) after setting RV500 to the mechanical center.

#### Note

RV504 is not equipped on the TBC-24 board of board number suffixes 11 and 12 of.  
Therefore, adjust RV500 only.



Perform following steps (8) through (11) only when the specification in step (7) is not satisfied.

(8) Playback the bowtie signal portion (17:00 to 19:00) of the alignment tape CR5-1B or CR5-1B PS again.

(9) Enter the maintenance mode, then enter A37 : TBC VR.

(10) Change the data value of item “SQ C RZ” within +2 or -2 so that the bowtie dip points move closer to each center markers.

(11) Perform step (7) again.

### Data save [to step (16)]:

Perform the data save only when SQ C RZ's data value of A37 : TBC VR is changed.

(12) To exit A37 : TBC VR, press the MENU button on the lower control panel.

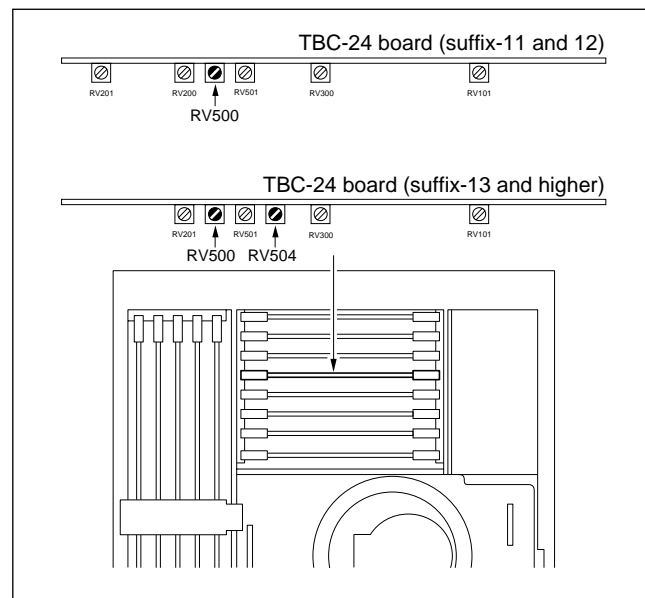
(13) Enter A3F : NV-RAM CONTROL, then execute “SAVE ALL ADJUST DATA”.

(14) Check that the message “Save Complete” is displayed on the video monitor.

(15) To exit A3F : NV-RAM CONTROL, press the MENU button once.

(16) To exit the maintenance mode, press the MENU button three times again.

(17) Eject the alignment tape CR5-1B/CR5-1B PS.



RV500 and RV504 on TBC-24 Board

**OXIDE adjustment [to step (20)]**

(18) Playback the bowtie signal portion (6:00 to 9:00) of the alignment tape CR5-2A or CR5-2A PS.

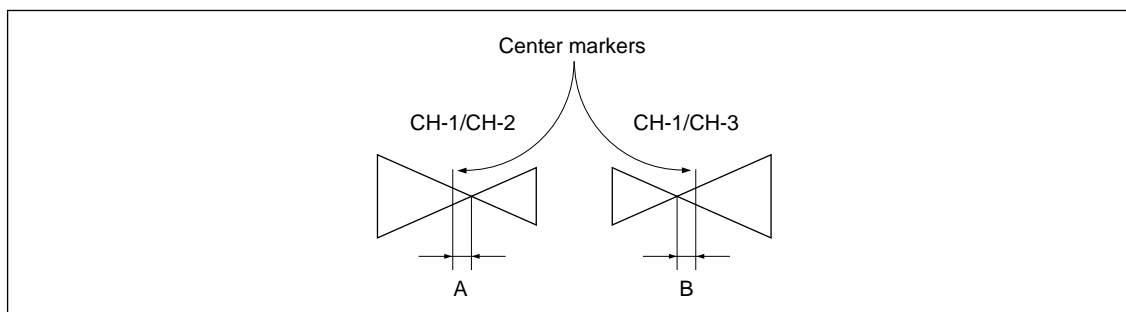
(DNW-A100/A50/A45: CR5-2A, DNW-A100P/A50P/A45P: CR5-2A PS)

(19) Adjust the deviations of CH-1/CH-2 (Y/B-Y) and CH-1/CH-3 (Y/R-Y).

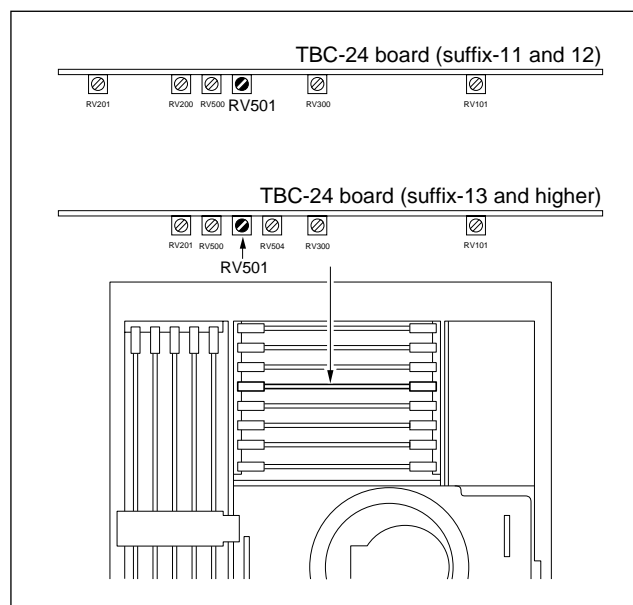
Adjustment point: RV501/TBC-24(C-1)

Specifications: A =  $0 \pm 10$  ns

B =  $0 \pm 10$  ns



(20) Eject the alignment tape CR5-2A/CR5-2A PS.

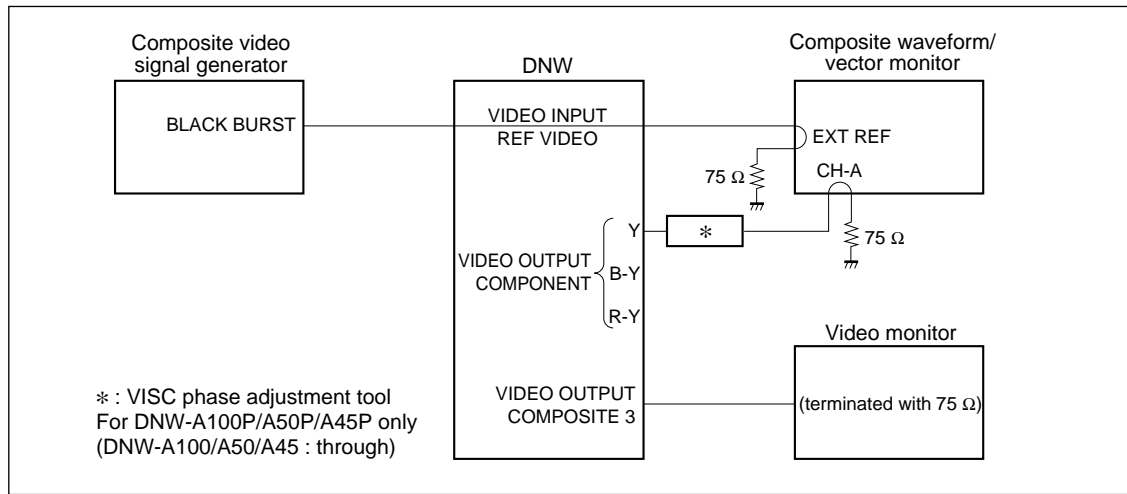


**RV501 on TBC-24 Board**

#### 4. VISC Phase Adjustment

Measuring equipment: Composite waveform/vector monitor (Refer to next figure.)

- (1) Connect the video signal generator, measuring equipment, (VISC adjustment tool,) and video monitor as shown below.



Connection in VISC Phase Adjustment

- (2) Enter the maintenance mode, then enter A37 : TBC VR.
- (3) Press the SET button once on the lower control panel to perform the tape operation.
- (4) Set the composite waveform/vector monitor as follows:  
SCH mode, INPUT: CH-A, EXT REF
- (5) Playback the H sweep signal (with VISC) portion (28:00 to 30:00) of the alignment tape CR5-1B or CR5-1B PS. (DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)

**Note**

Continue playing back the alignment tape from here till step (16).

Be sure to perform steps (6) through (15) continuously without interval.

- (6) Set the CAPSTAN LOCK switch on the sub control panel as follows, then return it to the 2FD after two seconds.

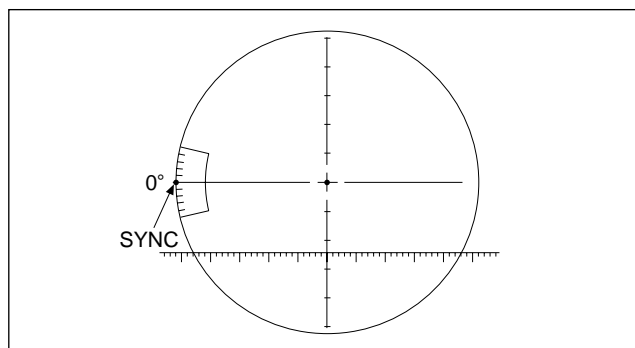
DNW-A100/A50/A45: 4FD

DNW-A100P/A50P/A45P: 8FD

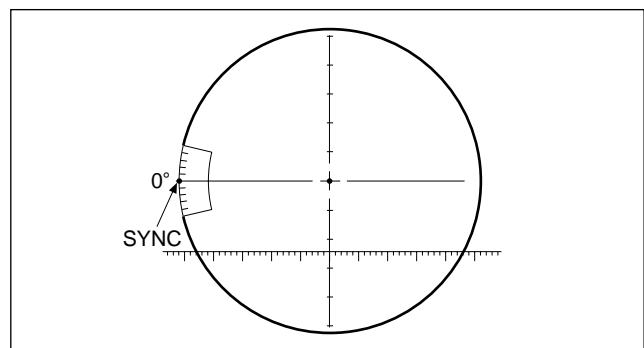
- (7) Align the SYNC phase to 0 degree using PHASE knob of the composite waveform/vector monitor.

**Note**

Turn the PHASE knob so that the beam spot (SYNC) moves in the shortest route to 0 degree.



DNW-A100/A50/A45



DNW-A100P/A50P/A45P

**VISC phase adjustment [to step (11)]**

- (8) Set the composite waveform/vector monitor as follows:

DNW-A100/A50/A45: VECTOR mode, Line select: 11, EXT REF

DNW-A100P/A50P/A45P: VECTOR mode, Line select: 8, EXT REF

- (9) Align the center position of VISC (beam spot) to 0 degree using PHASE knob of the composite waveform/vector monitor.

**Note**

Turn the PHASE knob so that the beam spot (VISC) moves in the shortest route to 0 degree.

- (10) Set the CAPSTAN LOCK switch on the sub control panel as follows:

DNW-A100/A50/A45: 4FD

DNW-A100P/A50P/A45P: 8FD

- (11) Adjust the center position of VISC (beam spot) to meet the specifications.

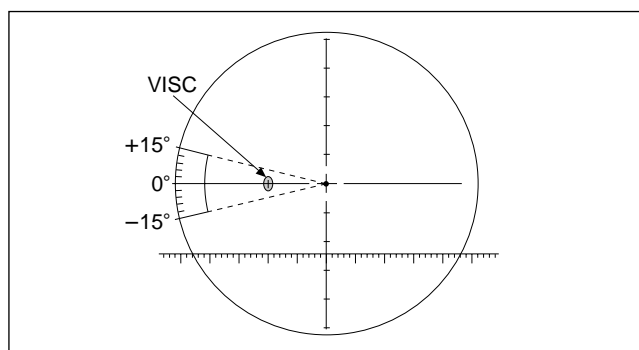
Adjustment point:  $\bullet$ RV200/TBC-23(C-1)

Specifications: Center of beam spot:  $0 \pm 5^\circ$

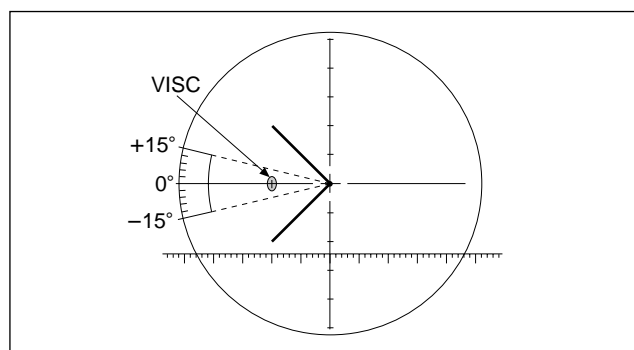
Jitters of beam spot:  $0 \pm 15^\circ$

**Note**

If the specification is not satisfied, perform VISC phase adjustment of steps (12) through (15) after setting RV200 to the mechanical center.



DNW-A100/A50/A45



DNW-A100P/A50P/A45P

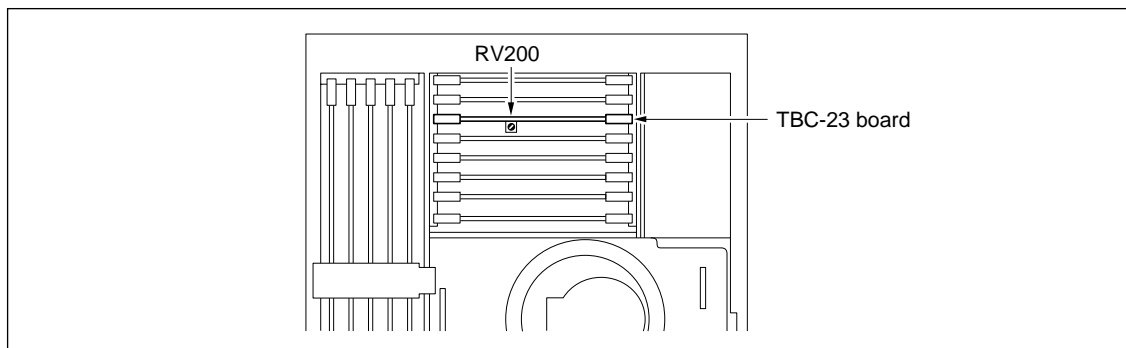
Perform following steps (12) through (15) when the specification in step (11) is not satisfied.

- (12) To operate the maintenance mode, press the MENU button once.

- (13) Change the data value of item "VISC PHASE" within +1 or -1 so that the center of VISC (beam spot) moves closer to 0 degree.

- (14) Press the SET button once on the lower control panel to perform the tape operation.

- (15) Perform step (11) again.



RV200 of TBC-23 Board

- (16) Stop the playback of the alignment tape CR5-1B/CR5-1B PS, and eject it.
- (17) To operate the maintenance mode, press the MENU button once.
- (18) To exit A37 : TBC VR, press the MENU button once again.

**Data save [to step (22)]:**

Perform the data save only when VISC PHASE's data value of A37 : TBC VR is changed.

- (19) To exit A37 : TBC VR, press the MENU button once.
- (20) Enter A3F : NV-RAM CONTROL of the maintenance mode, then execute "SAVE ALL ADJUST DATA".
- (21) Check that the message "Save Complete" is displayed on the video monitor.
- (22) To exit A3F : NV-RAM CONTROL, press the MENU button once.
- (23) To exit the maintenance mode, press the MENU button three times.

## 6-8. TBC-24 Board Replacement

The electrical adjustments are essential after the TBC-24 board is replaced.

To perform the electrical adjustment, the following equipment and fixtures are required.

**Note**

Some adjustments are different according to the board number suffix (XX of 1-648-542-XX) of TBC-24 board.

Be sure to check the suffix of board number before replacement. The board number is indicated on the left margin (A-6) of A side of TBC-24 board.

- Component video signal generator: TEKTRONIX TSG-300 or equivalent

**Note**

It is required that the component video signal generator is able to output the 50% bowtie signal.

- Composite video signal generator
  - For DNW-A100/A50/A45: TEKTRONIX TSG-170A or equivalent
  - For DNW-A100P/A50P/A45P: TEKTRONIX TSG-271 or equivalent
- Component waveform monitor: TEKTRONIX WFM300 or equivalent
- Composite waveform/vector monitor
  - For DNW-A100/A50/A45: TEKTRONIX 1750, 1780R, or equivalent
  - For DNW-A100P/A50P/A45P: TEKTRONIX 1751, 1781R, or equivalent
- Composite video monitor
- Extension board: EX-377 (SONY part No. J-6269-810-A)
- 75  $\Omega$  terminators (5 pcs.)
- Cleaning tape: BCT-5CLN (SONY standard products)
- Alignment tapes
  - For DNW-A100/A50/A45: CR5-1B (SONY part No. 8-960-096-41) and CR5-2A (SONY part No. 8-960-097-44)
  - For DNW-A100P/A50P/A45P: CR5-1B PS (SONY part No. 8-960-096-91) and CR5-2A PS (SONY part No. 8-960-098-44)

## 6-8-1. Replacement Procedure

**Note**

Turn off the POWER switch before starting the replacement.

- (1) Remove the upper lid, board retainer (S), and TBC-24 (original) board.  
(Refer to “6-1-3. Plug-in Board Pulling out/Insertion”.)
- (2) Disconnect the one disconnected harness (that it connected TBC-24 board and TBC-23 board) from TBC-23 board.
- (3) After inserting the extension board EX-377 to the slot for TBC-24 board, and then connect a new TBC-24 board to the extension board.
- (4) Connect the extension harness to CN1 on TBC-24 (new) board and CN1 on TBC-23 board.
- (5) Clean the video heads using a cleaning tape.  
(Refer to “5-2-1. Cleaning using Cleaning Tape”.)
- (6) Perform the electrical adjustments (Section 6-8-2).

**Note**

Remove the extension board and extension harness in some steps of the electrical adjustment.

- (7) For DNW-A100/A50/A45 only  
Return the ITEM-709 and ITEM-713 of setup extend menu to previous settings after the electrical adjustments are completed.
- (8) Return the states of S1100-1 on the SS-63 board and control panels to their previous states.
- (9) Turn off the power, and wait for 30 seconds.
- (10) Reattach the board retainer (S) and upper lid.  
(Refer to “6-1-3. Plug-in Board Pulling out/Insertion”.)

## 6-8-2. Electrical Adjustments

### Adjustment Items

No.	Item	Adjustment point	Notes
0	Preparation		
1	Component output level adjustment		
	METAL Y	RV101/TBC-24	VIDEO OUTPUT COMPONENT
	METAL C	RV201/TBC-24	
	OXIDE Y	RV504/DM-89	
	OXIDE C	RV704/DM-89 (DNW-A100P/A50P/A45P only)	
2	A/D clamp DC level adjustment (Note 1)		
	C	RV202/TBC-24	TP202/TBC-24
	Y	RV102/TBC-24	TP102/TBC-24
3	VCO lock-in range adjustment		
	Y	RV404/TBC-24 (Note 2)	RV404/TBC-24
		LV401/TBC-24	TP403/TBC-24
	C	RV604/TBC-24 (Note 2)	RV604/TBC-24
		LV601/TBC-24	TP603/TBC-24
4	FAST VCO tracking adjustment		
	Gain	RV400/TBC-24 (Note 3)	RV400/TBC-24
	Offset	RV402/TBC-24 (Note 4)	Video monitor
5	PB video phase adjustment	RV300/TBC-24 A37: TBC VR: SQ Y RZ (Note 5)	VIDEO OUTPUT COMPONENT Y
6	TBC Y/C delay rough adjustment		
	METAL	RV502/TBC-24 RV503/TBC-24 RV500/TBC-24 A37: TBC VR: SQ Y RZ (Note 6) RV504/TBC-24 (Note 7)	VIDEO OUTPUT COMPONENT
7	Impact error offset adjustment		
	Y	RV401/TBC-24	Video monitor
	C	RV601/TBC-24	
8	TBC Y/C delay adjustment		
	METAL	RV500/TBC-24 RV504/TBC-24 (Note 7)	VIDEO OUTPUT COMPONENT
	OXIDE	RV501/TBC-24	VIDEO OUTPUT COMPONENT

Note 1: Their RV102 and RV202 are not equipped on the TBC-24 board of board number suffixes 13 and higher.

Note 2: Their RV404 and RV604 are not equipped on the TBC-24 board of board number suffixes 11 and 12.

Note 3: This RV400 is not equipped on the TBC-24 board of board number suffixes 13 and higher.

Note 4: This RV402 is not equipped on the TBC-24 board of board number suffixes 14 and higher for DNW-A100P/A50P/A45P only.

Note 5: If the specification is not satisfied by RV300, change the data of A37: TBC VR: SQ Y RZ.

Note 6: If the specification is not satisfied by RV500, change the data of A37: TBC VR: SQ C RZ.

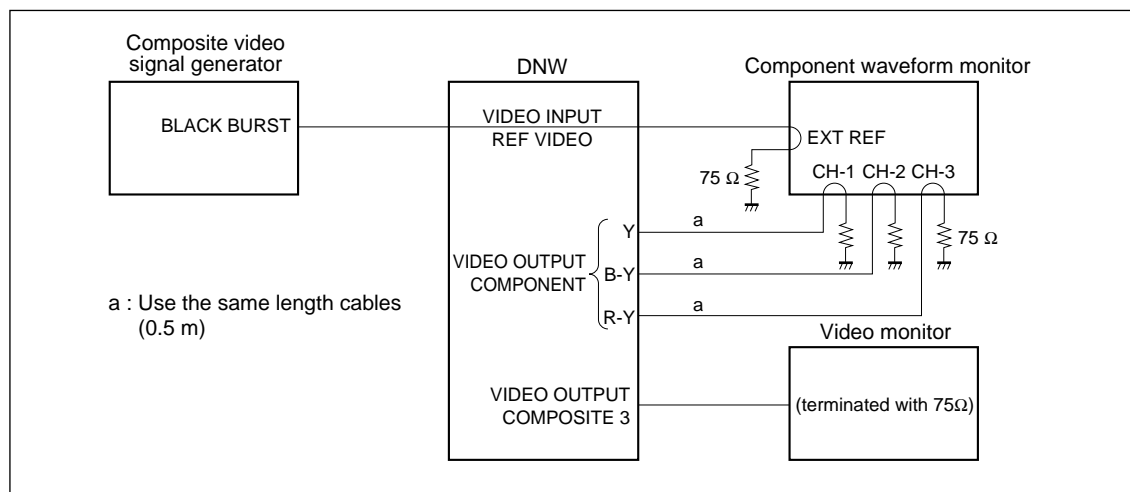
Note 7: This RV504 is not equipped on the TBC-24 board of board number suffixes 11 and 12.



## 0. Preparation

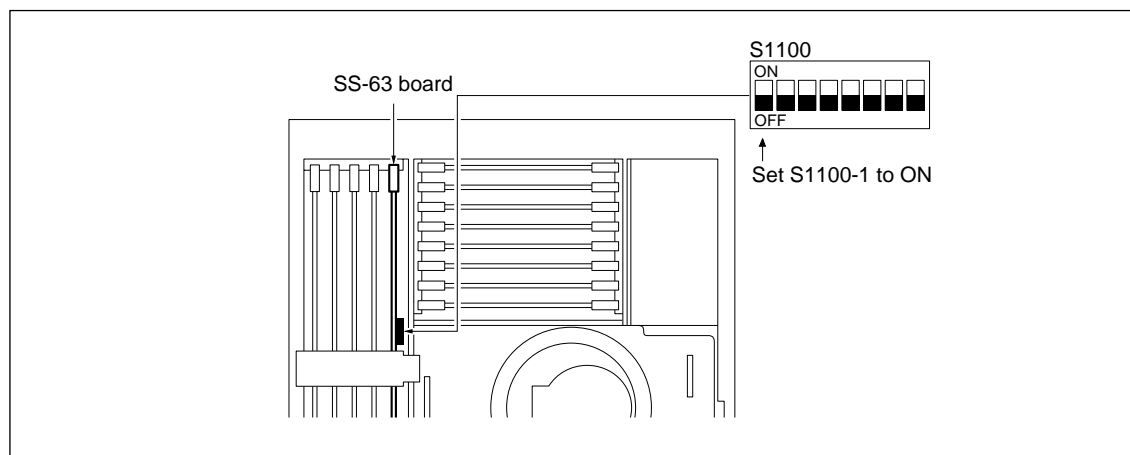
### Connection

Connect the video signal generator, measuring equipment, and video monitor as shown below.



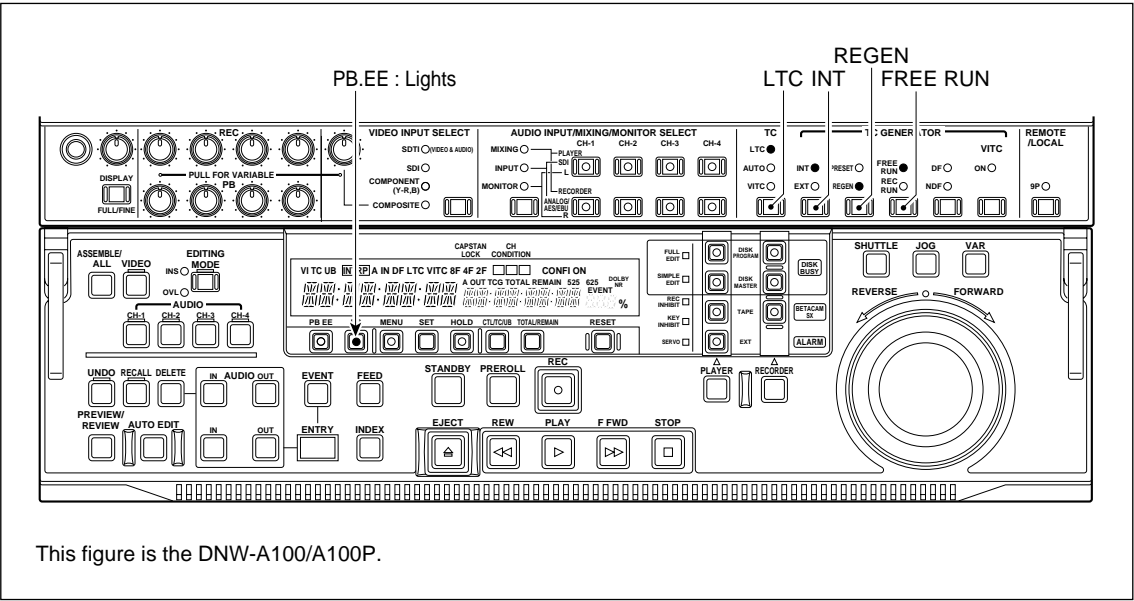
### Setting of DNW

(1) Set S1100-1 on SS-63 board to ON to treat the extended menu of the setup menu.



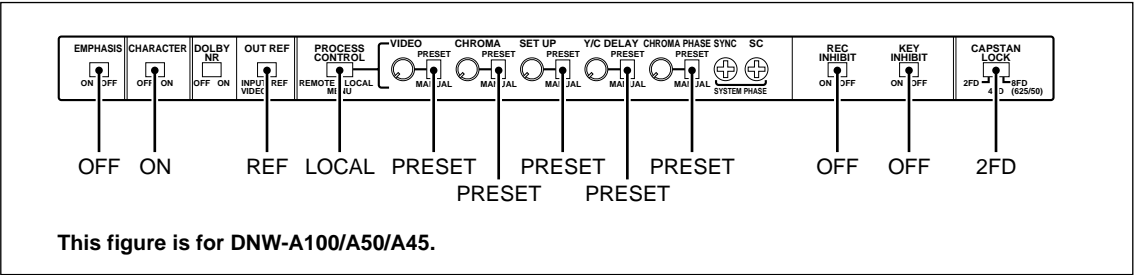
**S1100 of SS-63 Board**

(2) Turn on the power, and set each control panel as shown below.



This figure is the DNW-A100/A100P.

Upper/Lower Control Panels



This figure is for DNW-A100/A50/A45.

Sub Control Panel

- (3) Setting of the setup extend menu
- For DNW-A100/A50/A45  
Set the SUB-ITEMs of ITEM-709 and ITEM-713 as shown below.  
After adjustments are completed, return the SUB-ITEMs to their previous settings.

ITEM	SUB-ITEM	Setting	Previous setting (fill up)
709 : CAV LEVEL FORMAT	1. OUTPUT CAV LEVEL	B-CAM	
713 : VIDEO SETUP REFERENCE LEVEL	0. MASTER LEVEL	0.0%	
	3. BETACAM PB LEVEL	MSTER	
	4. OUTPUT LEVEL	MSTER	

- For DNW-A100P/A50P/A45P  
None.

## For Maintenance Mode

The operation of the maintenance mode is described as follows:

### Notes

The sub mode and menus of the maintenance mode that are used after replacing the TBC-23 board are as shown below.

#### • Entering the maintenance mode

- (1) Press S1101 (G-1) on the SS-63 board.

#### • Shifting to the next menu (mode)

- (1) Press the JOG button once to enter the JOG mode.
- (2) To set the cursor (\* mark) to the desired menu (mode), turn the search dial.
- (3) Press the SET button once.

```

M0 : TAPE MAINTENANCE
├── A3 : BETACAM PB ADJUST
│   ├── A37 : TBC VR
│   └── A3F : NV-RAM CONTROL
  
```

#### • Exiting from the current menu (mode)

- (1) Press the MENU button once.

### Note

To exit from the maintenance mode, press the MENU button several times.

#### • Changing the data value

- (1) To set the cursor (\* mark) to the item, turn the search dial.
- (2) Turn the search dial slowly while pressing the JOG button. = **Data value changes.**  
 REVERSE direction: the data value decreases (FF follows 00)  
 FORWARD direction: the data value increases (00 follows FF)

### Note

During adjustment, change the rotational direction of the search dial watching to the change of waveform that is displayed on the measuring equipment.

#### • Saving the data

- (1) To set the cursor (\* mark) to A3F : NV-RAM CONTROL, turn the search dial.
- (2) Press the SET button once.
- (3) To set the cursor (\* mark) to “SAVE ALL ADJUST DATA”, turn the search dial.
- (4) Press the SET button once.

1. Component Output Level (Betacam) Adjustment

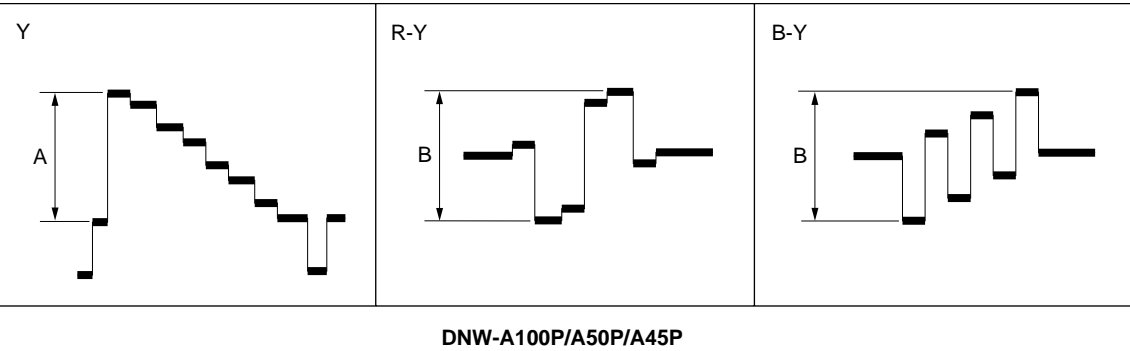
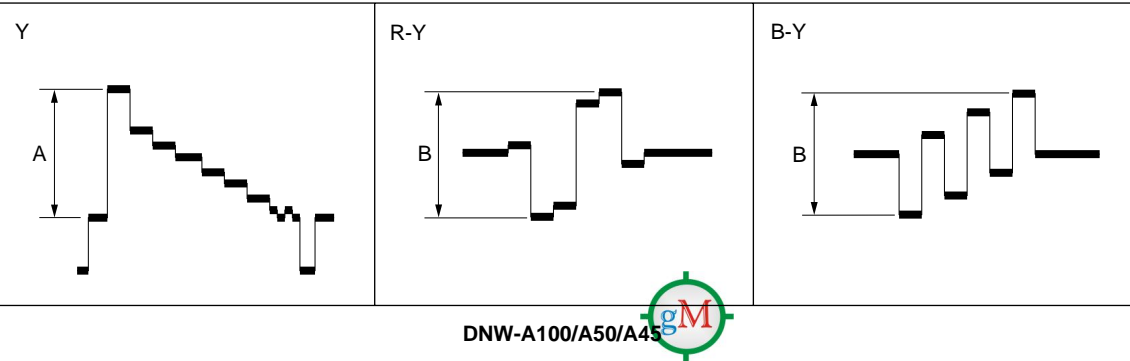
Measuring equipment: Component waveform monitor (terminated with 75 Ω)

(1) METAL Y/C adjustment

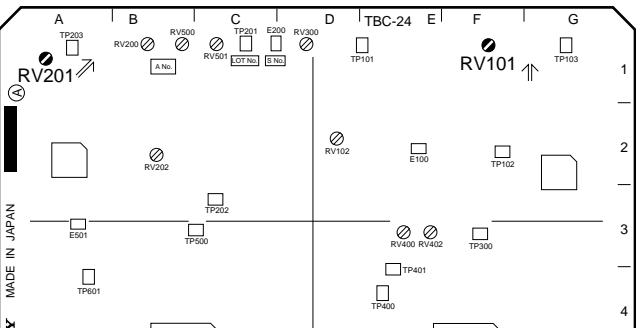
Playback the color-bar signal portion (14:00 to 17:00) of the alignment tape CR5-1B or CR5-1B PS, and perform the adjustment of each component signal level.

(DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)

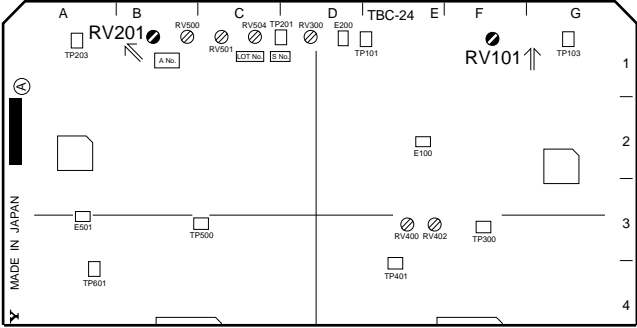
Observation component	Specifications for DNW-A100/A50/A45	Specifications for DNW-A100P/A50P/A45P	Adjustment point
Y	A = 714 ± 7 mV (A = 100 ± 1 IRE)	A = 700 ± 7 mV	RV101/TBC-24(F-1)
R-Y/B-Y	B = 700 ± 7 mV p-p	B = 700 ± 7 mV p-p	RV201/TBC-24(A/B-1)



(2) Eject the alignment tape CR5-1B/CR5-1B PS.



TBC-24 Board (Side A) (Suffix-11 and -12)



TBC-24 Board (Side A) (Suffix-13 and higher)

## (3) OXIDE Y/C confirmation

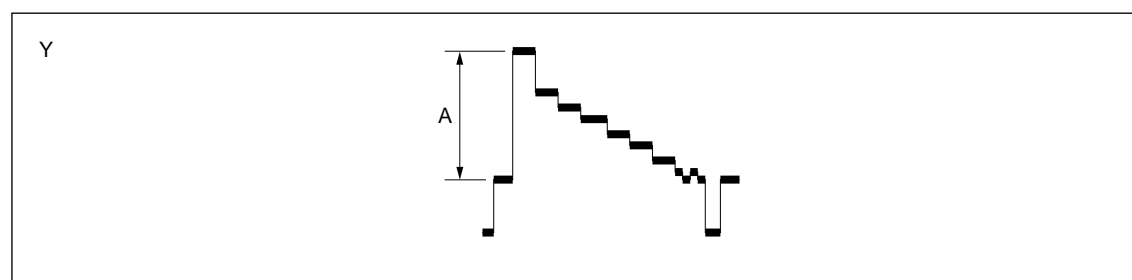
Playback the 75% color-bar signal portion (0:00 to 3:00) of the alignment tape CR5-2A or CR5-2A PS, and perform the check of each component signal level. If the specification is not satisfied, perform the adjustment of the component output level.

(DNW-A100/A50/A45: CR5-2A, DNW-A100P/A50P/A45P: CR5-2A PS)

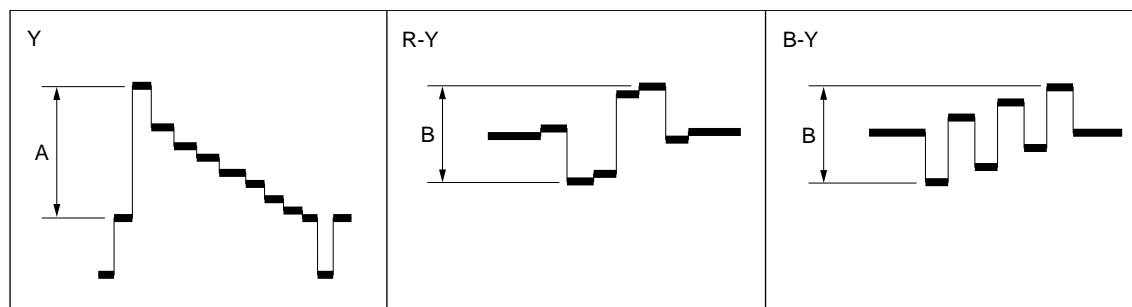
**Note**

For DNW-A100/A50/A45, perform the check (adjustment) for Y signal only.

Observation component	Specifications for DNW-A100/A50/A45	Specifications for DNW-A100P/A50P/A45P	Adjustment point
Y	$A = 714 \pm 7 \text{ mV}$ ( $A = 100 \pm 1 \text{ IRE}$ )	$A = 700 \pm 7 \text{ mV}$	RV504/DM-89(F-1)
R-Y/B-Y	—	$B = 525 \pm 5 \text{ mV p-p}$	RV704/DM-89(B-1) DNW-A100P/A50P/A45P only

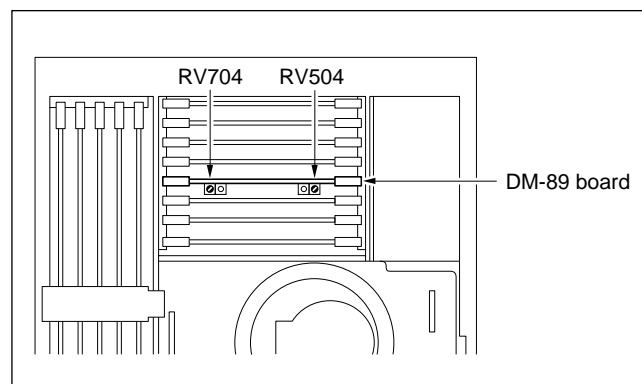


DNW-A100/A50/A45



DNW-A100P/A50P/A45P

## (4) Eject the alignment tape CR5-2A/CR5-2A PS.



RV504 and RV704 on DM-89 Board

**Note**

RV504 and RV704 on DM-89 board are possible to adjust without using the extension board.

## 2. A/D Clamp DC Level Adjustment

### Note

“A/D Clamp DC Level Adjustment” is needed for TBC-24 board of the board number suffixes 11 and 12.

Measuring equipment: Oscilloscope

- (1) When the alignment tape is inserted to DNW, eject it.
- (2) Connect and set the oscilloscope as follows:  
CH-1: TP202/TBC-24(C-3), 500 mV/DIV, 10  $\mu$ s/DIV, GND: E200/TBC-24(C-1)  
CH-2: TP102/TBC-24(F-2), 500 mV/DIV, GND: E100/TBC-24(E-2)  
Display: CH-1
- (3) Turn off the power of DNW, then wait for 1 minute.
- (4) DC level measurement for C  
Measure the DC level on the oscilloscope's CH-1 (TP202) just after turning on the power.
- (5) Turn off the power of DNW, then wait for 1 minute.
- (6) Change the display mode of the oscilloscope to CH-2.
- (7) DC level measurement for Y  
Measure the DC level on the oscilloscope's CH-2 (TP102) just after turning on the power.

Measurement point	Measuring value (fill up)	Note
CH-1: TP202/TBC-24(C-3)		C
CH-2: TP102/TBC-24(F-2)		Y

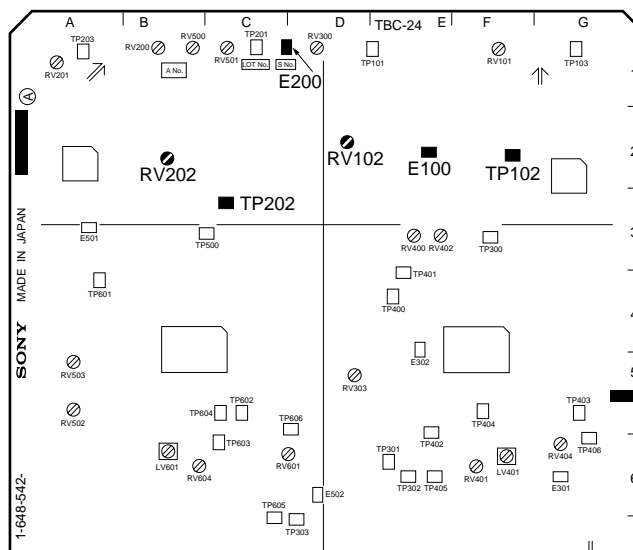
- (8) Adjustments  
Playback the color-bar signal portion (14:00 to 17:00) of the alignment tape CR5-1B or CR5-1B PS, and adjust the DC voltage level of the following measurement points as identical to the measured voltage in steps (4) and (7). (DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)

Measurement point	Adjustment point	Note
CH-1: TP202/TBC-24(C-3)	⌀RV202/TBC-24(B-2)	C
CH-2: TP102/TBC-24(F-2)	⌀RV102/TBC-24(D-2)	Y

- (9) Stop the playback of the alignment tape CR5-1B/CR5-1B PS or eject it.

### Note

It is not necessary to eject the alignment tape when perform subsequent “3. VCO Lock-in Range Adjustment.



### TBC-24 Board (Side A) (Suffix-11 and -12)



#### 4. FAST VCO Tracking Adjustment

Measuring equipment: Video monitor

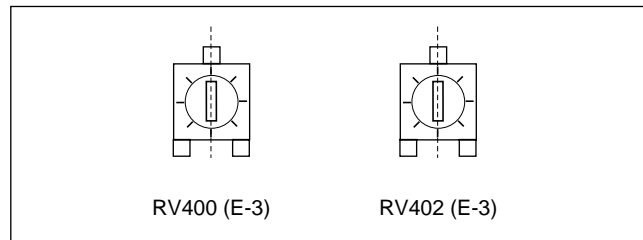
- (1) Set the following RVs on TBC-24 board to each specified position as shown below.

### Note

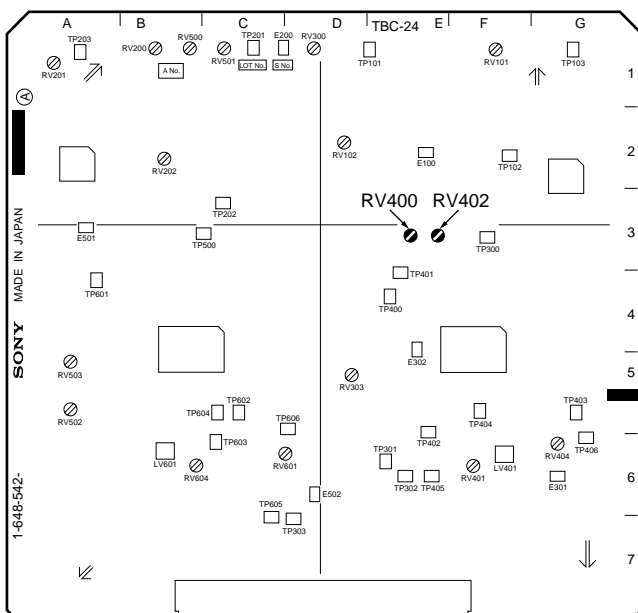
Specified RV(s) are not equipped according to the model and the board number suffix of TBC-24 board.

Suffix	RV400	RV402
11, 12, 13	○	○
14 and higher	×	○: DNW-A100/A50/A45 ×: DNW-A100P/A50P/A45P

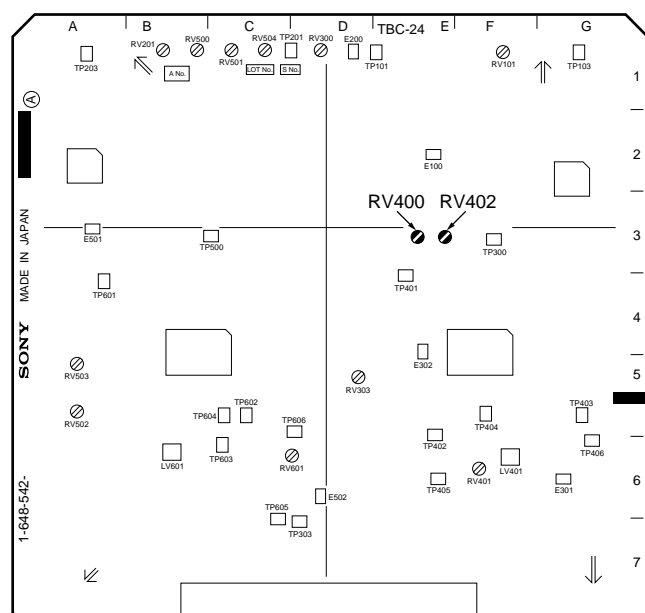
○: With RV      X: Without RV



- (2) Playback the color-bar signal portion (14:00 to 17:00) of the alignment tape CR5-1B or CR5-1B PS in the REW and FF mode, and confirm that the picture (color-bar) displays on the video monitor.  
(DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)
- (3) Playback the color-bar signal portion (14:00 to 17:00) of the alignment tape CR5-1B/CR5-1B PS in the SHUTTLE –24 times speed, then confirm that vertical lines of color-bar on the video monitor displays straight.  
In DNW-A100/A50/A45 only, if vertical lines are not straight, adjust RV402.
- (4) Playback the color-bar signal portion (14:00 to 17:00) of the alignment tape CR5-1B/CR5-1B PS in the range from VARIABLE –10 times speed to fastest + speed, then confirm that vertical lines of color-bar on the video monitor displays straight.  
In DNW-A100/A50/A45 only, if vertical lines are not straight, adjust RV402.
- (5) Eject the alignment tape CR5-1B/CR5-1B PS.
- (6) Playback the color-bar signal portion (0:00 to 3:00) of the alignment tape CR5-2A or CR5-2A PS in the REW and FF mode, and confirm that the picture (color-bar) displays on the video monitor.  
(DNW-A100/A50/A45: CR5-2A, DNW-A100P/A50P/A45P: CR5-2A PS)
- (7) Eject the alignment tape CR5-2A/CR5-2A PS.



### TBC-24 Board (Side A) (Suffix-11 and -12)



**TBC-24 Board (Side A) (Suffix-13 and higher)**



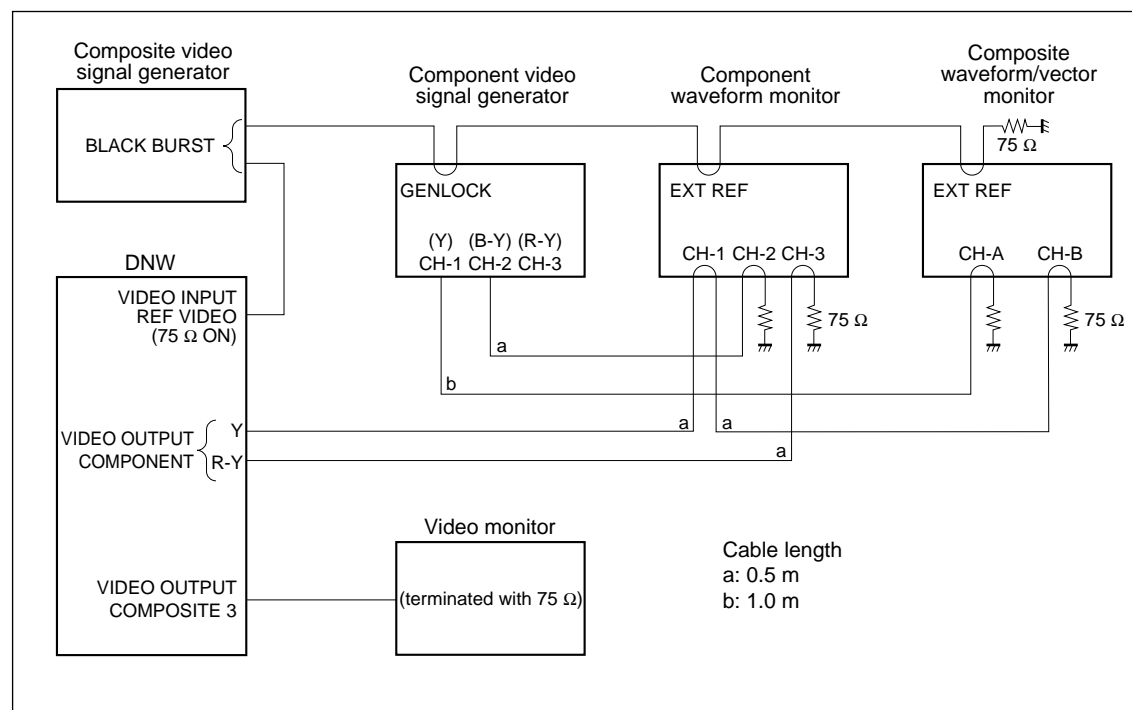
## 5. PB Video Phase Adjustment

### Note

Perform this adjustment without using the extension board.

Measuring equipment: Refer to next figure.

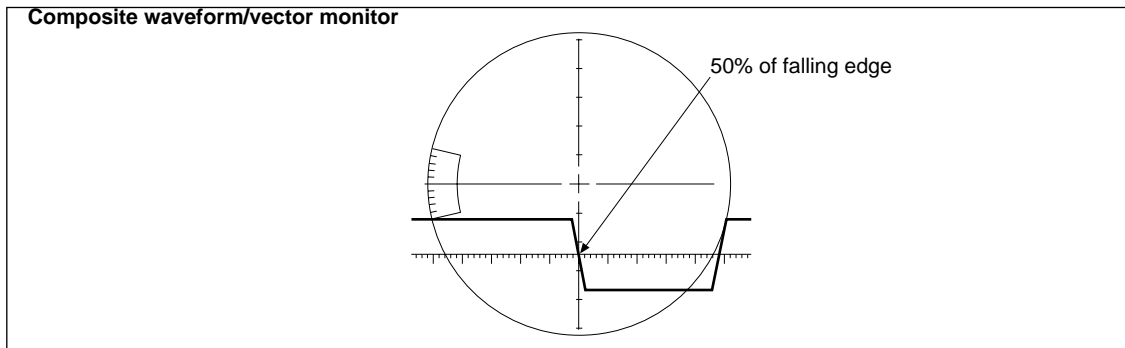
- (1) Turn off the power of DNW, then wait for 30 seconds.
- (2) Remove the TBC-24 board from the extension board, then pull out the extension board.
- (3) Insert the TBC-24 board to DNW.
- (4) Turn on the power.
- (5) Connect the video signal generators, measuring equipments, and video monitor as shown below.  
And set the output of the component video signal generator to 50% bowtie signal.



Connection in PB Video Phase Adjustment

**System SYNC position adjustment [to step (10)]**

- (6) Set the composite waveform/vector monitor as follows:  
WAVEFORM mode, SWEEP: 2H, MAG ON, INPUT: CH-A, EXT REF
- (7) Display the H SYNC signal part of CH-A side on the composite waveform/vector monitor, then align 50% position of falling edge for readability. (See the figure below.)
- (8) Playback the bowtie signal portion (17:00 to 19:00) of the alignment tape CR5-1B or CR5-1B PS.  
(DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)
- (9) Change the observation signal (channel) of the composite waveform/vector monitor from CH-A to CH-B, then adjust the 50% position of falling edge of H SYNC signal of CH-B to the identical position as CH-A using the SYNC control VR on the sub control panel.



- (10) Stop the playback of the alignment tape CR5-1B/CR5-1B PS.

**System SYNC phase adjustment [to step (15)]**

- (11) Set the composite waveform/vector monitor as follows:  
SCH mode, INPUT: CH-A, EXT REF
- (12) Align the SYNC phase of CH-A to 0 degree using PHASE knob of the composite waveform/vector monitor. (See the figure below.)

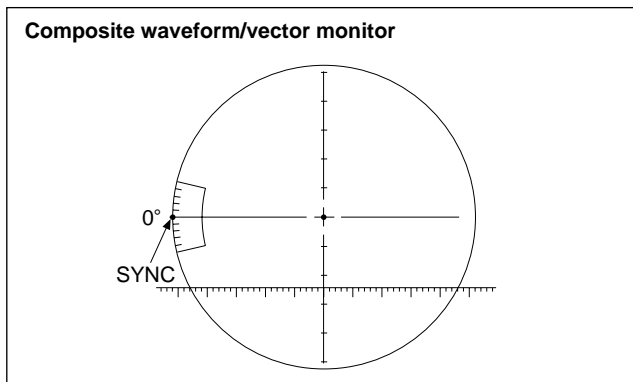
**Note**

Turn the PHASE knob so that the beam spot (SYNC) moves in the shortest route to 0 degree.

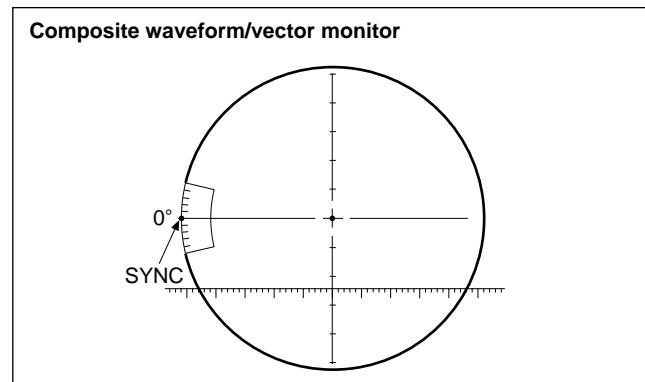
- (13) Playback the bowtie signal portion (17:00 to 19:00) of the alignment tape CR5-1B or CR5-1B PS.  
(DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)
- (14) Change the observation signal (channel) of the composite waveform/vector monitor from CH-A to CH-B, then adjust the SYNC (beam spot) of CH-B to 0 degree (the identical position as CH-A) using the SC control VR on the sub control panel.

**Note**

Turn the SC control VR so that the beam spot (SYNC) moves in the shortest route to 0 degree.




DNW-A100/A50/A45

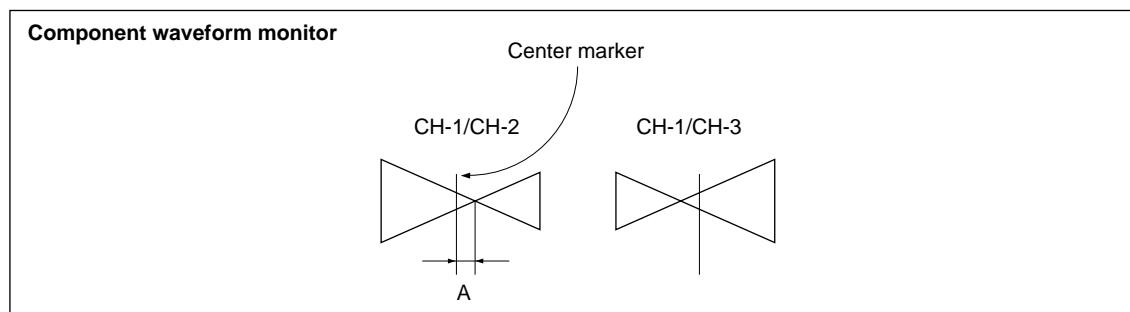


DNW-A100P/A50P/A45P

- (15) Stop the playback of the alignment tape CR5-1B/CR5-1B PS.

**Y phase confirmation [to step (28)]**

- (16) Set the component waveform monitor to BOWTIE mode.
- (17) Playback the bowtie signal portion (17:00 to 19:00) of the alignment tape CR5-1B or CR5-1B PS.  
(DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)
- (18) Adjust the deviation A between the center marker and bowtie dip point of CH-1/CH-2 (Y/B-Y).  
Adjustment point: RV300/TBC-24(D-1)  
Specification:  $A = 0 \pm 10$  ns  
If the specification is not satisfied by adjustment, perform steps (19) through (22) after setting RV300 to the mechanical center.



Perform following steps (19) through (22) only when the specification in step (18) is not satisfied.

- (19) Playback the bowtie signal portion (17:00 to 19:00) of the alignment tape CR5-1B or CR5-1B PS again.
- (20) Enter the maintenance mode, then enter A37 : TBC VR.
- (21) Change the data value of item “SQ Y RZ” within +1 or –1 so that the bowtie dip point moves closer to the center marker.
- (22) Perform step (18) again.

**Data save [to step (27)]:**

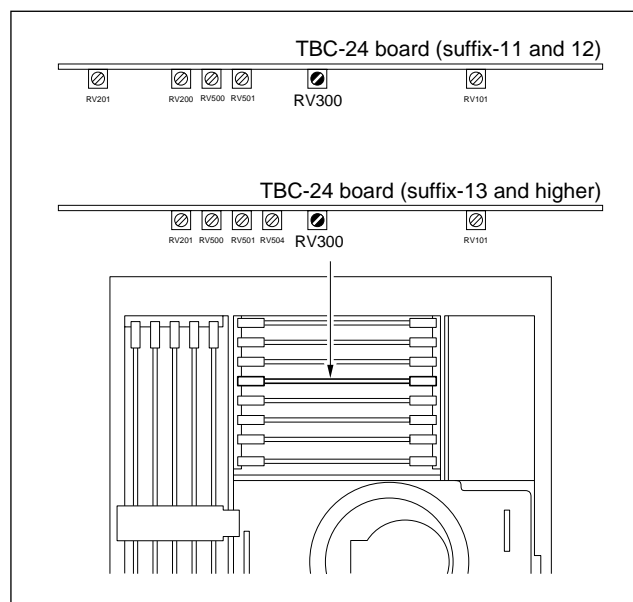
Perform following steps (23) through (27) only when SQ Y RZ’s data value of A37 : TBC VR is changed.

- (23) To exit A37 : TBC VR, press the MENU button on the lower control panel.
- (24) Enter A3F : NV-RAM CONTROL, then execute “SAVE ALL ADJUST DATA”.
- (25) Check that the message “Save Complete” is displayed on the video monitor.
- (26) To exit A3F : NV-RAM CONTROL, press the MENU button once.
- (27) To exit the maintenance mode, press the MENU button three times again.

- (28) Stop the playback of the alignment tape CR5-1B/CR5-1B PS or eject it.

**Note**

It is not necessary to eject the alignment tape when perform subsequent “6. TBC Y/C Delay Rough Adjustment”.

**RV300 on TBC-24 Board**

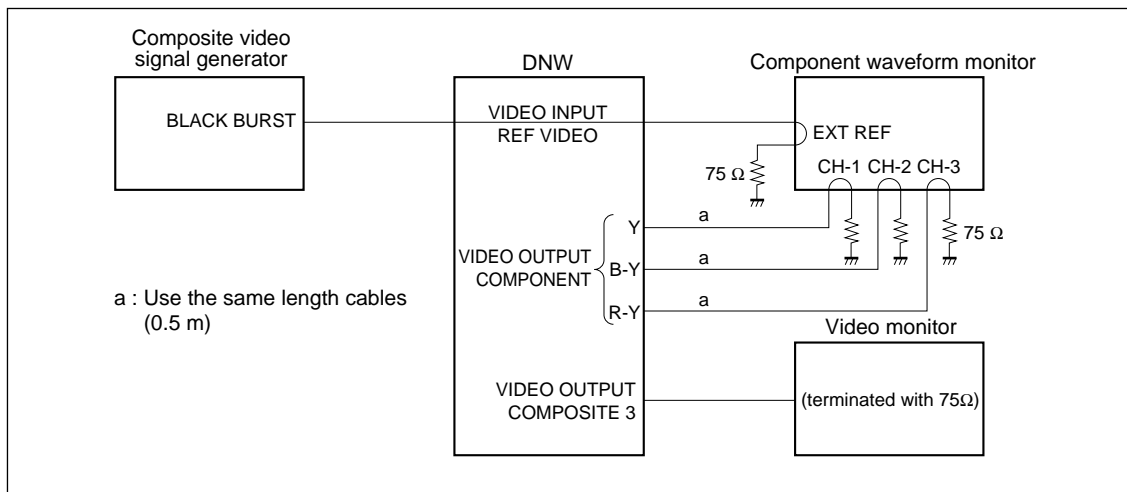
## 6. TBC Y/C Delay Rough Adjustment

Measuring equipment: Component waveform monitor (Refer to next figure.)

- (1) Turn off the power of DNW, then wait for 30 seconds.
- (2) Extend the TBC-24 board with the extension board.
- (3) Turn on the power.
- (4) Connect the video signal generator, measuring equipment, and video monitor as shown below.

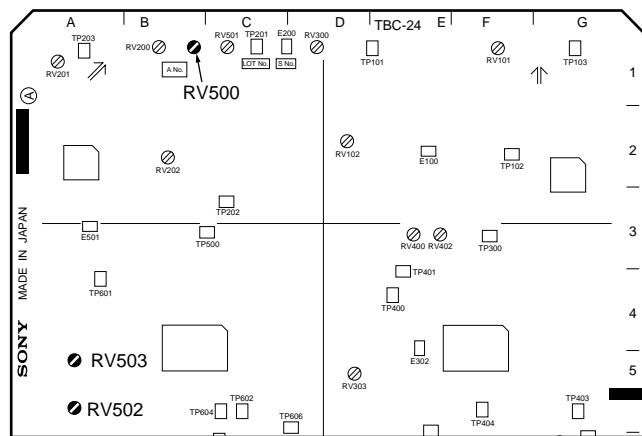
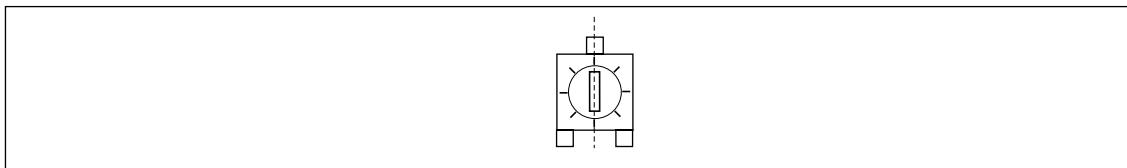
### Note

Do not change the connection until “8. TBC Y/C Delay Adjustment” is finished.

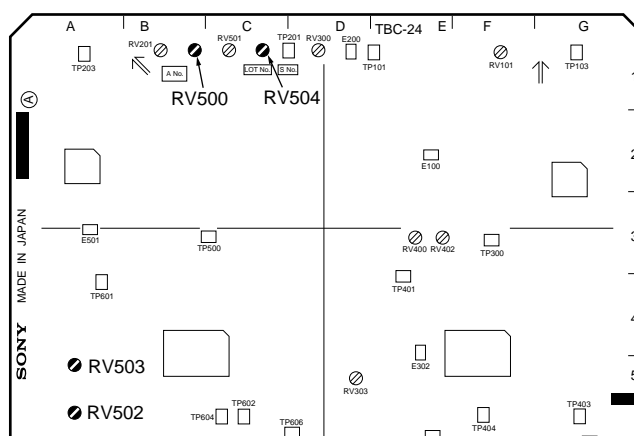


### Connection in Y/C Delay Adjustment

- (5) Set the component waveform monitor to BOWTIE mode.
- (6) Set RV502 (A-5) on TBC-24 board to the specified position as shown below.



### TBC-24 Board (Side A) (Suffix-11 and -12)



### TBC-24 Board (Side A) (Suffix-13 and Higher)

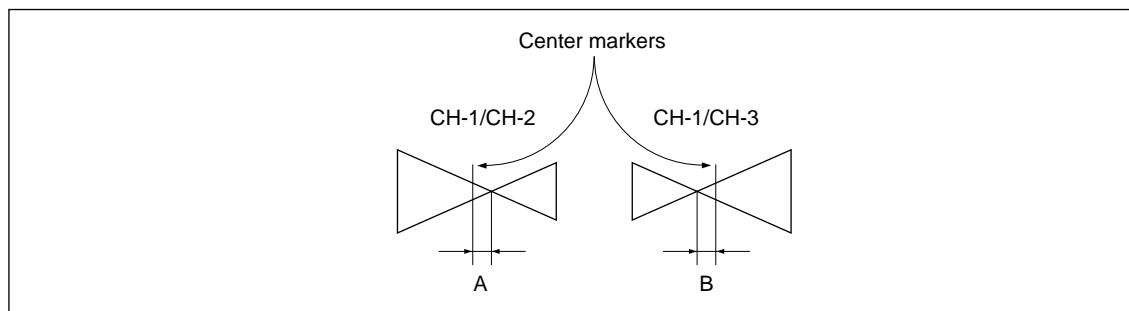
**METAL adjustment [to step (19)]**

- (7) Playback the bowtie signal portion (17:00 to 19:00) of the alignment tape CR5-1B or CR5-1B PS.  
(DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)
- (8) Adjust the difference of deviations A and B between each center marker and bowtie dip point of CH-1/CH-2 (Y/B-Y) and CH-1/CH-2 (Y/R-Y).  
Adjustment point: **RV503/TBC-24(A-5)**  
Specification:  $A - B = 0 \pm 10$  ns (Refer to next figure.)
- (9) Adjust the deviations A and B.  
Adjustment points: Field 1: **RV500/TBC-24(B-1)**  
Field 2: **RV504/TBC-24(C-1)**  
Specifications:  $A = 0 \pm 10$  ns  
 $B = 0 \pm 10$  ns

If the specification is not satisfied by adjusting RV500, perform steps (10) through (13) after setting RV500 to the mechanical center.

**Note**

RV504 is not equipped on the TBC-24 board of board number suffixes 11 and 12.  
Therefore, adjust RV500 only.



Perform following steps (10) through (13) when the specification in step (9) is not satisfied.

- (10) Playback the bowtie signal portion (17:00 to 19:00) of the alignment tape CR5-1B or CR5-1B PS again.
- (11) Enter the maintenance mode, then enter A37 : TBC VR.
- (12) Change the data value of item "SQ C RZ" within +2 or -2 so that the bowtie dip points move closer to the center markers.
- (13) Perform step (9) again.

**Data save [to step (18)]:**

Perform following steps (14) through (18) only when SQ C RZ's data value of A37 : TBC VR is changed.

- (14) To exit A37 : TBC VR, press the MENU button on the lower control panel.
- (15) Enter A3F : NV-RAM CONTROL, then execute "SAVE ALL ADJUST DATA".
- (16) Check that the message "Save Complete" is displayed on the video monitor.
- (17) To exit A3F : NV-RAM CONTROL, press the MENU button once.
- (18) To exit the maintenance mode, press the MENU button three times again.

- (19) Stop the playback of the alignment tape CR5-1B/CR5-1B PS or eject it.


**Note**

It is not necessary to eject the alignment tape when perform subsequent "7. Impact Error Offset Adjustment".

## 7. Impact Error Offset Adjustment

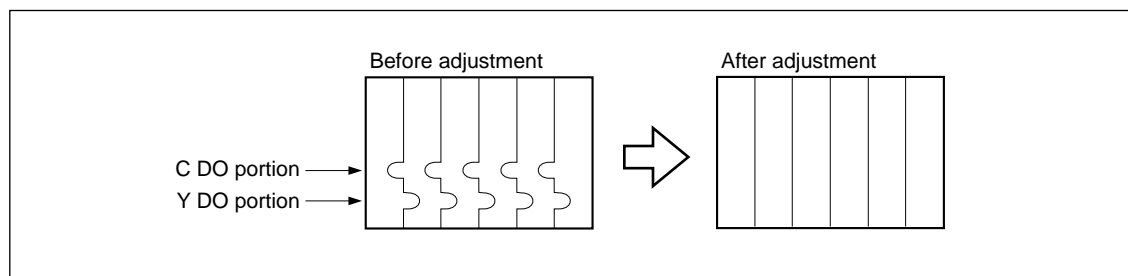
Measuring equipment: Video monitor

- (1) Playback the color-bar signal portion (26:00 to 28:00) of the alignment tape CR5-1B or CR5-1B PS.  
(DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)
- (2) Adjust the following RVs until disappear the drop-out parts (Y DO and C DO) of displaying color-bar on the video monitor.

Adjustment points: Y DO: RV401/TBC-24(F-6)

C DO: RV601/TBC-24(D-6)

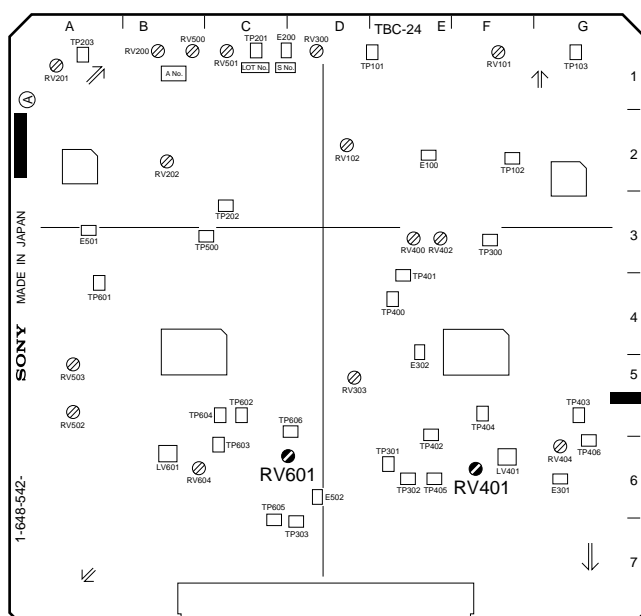
Specification: See the figure below.



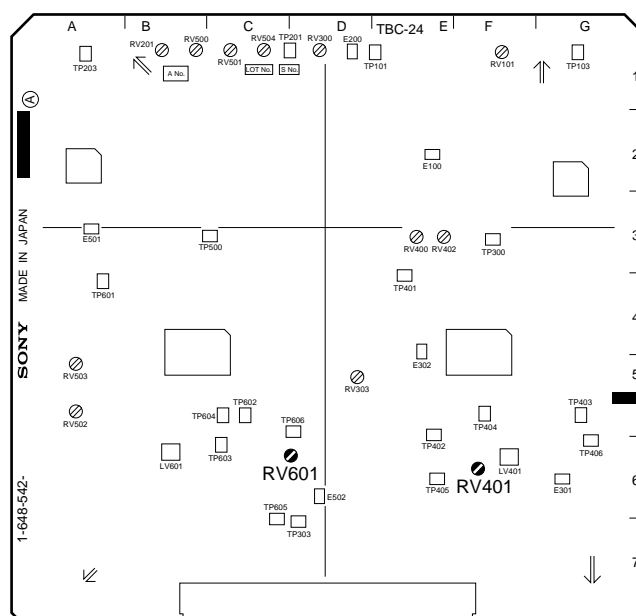
- (3) Eject the alignment tape CR5-1B/CR5-1B PS.

### Note

It is not necessary to eject the alignment tape when perform subsequent “8. TBC Y/C Delay Adjustment”.



### TBC-24 Board (Side A) (Suffix-11 and -12)



### TBC-24 Board (Side A) (Suffix-13 and higher)

## 8. TBC Y/C Delay Adjustment

### Note

Perform this adjustment without using the extension board.

Measuring equipments: Component waveform monitor

- (1) Turn off the power of DNW, then wait for 30 seconds.
- (2) Disconnect the extension harness from TBC-23 board and TBC-24 board.
- (3) Remove the TBC-24 board from the extension board, then pull out the extension board.
- (4) Insert the TBC-24 board to DNW.
- (5) Connect originally harness to CN1 on TBC-24 board and CN1 on TBC-23 board.
- (6) Turn on the power.
- (7) Set the component waveform monitor to BOWTIE mode.

### METAL adjustment [to step (10)]

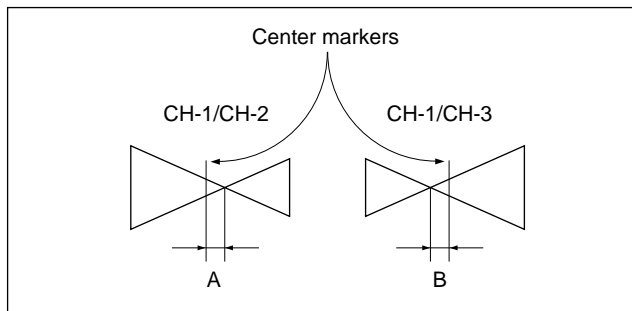
- (8) Playback the bowtie signal portion (17:00 to 19:00) of the alignment tape CR5-1B or CR5-1B PS.  
(DNW-A100/A50/A45: CR5-1B, DNW-A100P/A50P/A45P: CR5-1B PS)
- (9) Adjust the deviations A and B between each center marker and bowtie dip point of CH-1/CH-2 (Y/B-Y) and CH-1/CH-3 (Y/R-Y).

Adjustment points: Field 1: ●RV500/TBC-24(B-1)  
Field 2: ●RV504/TBC-24(C-1)

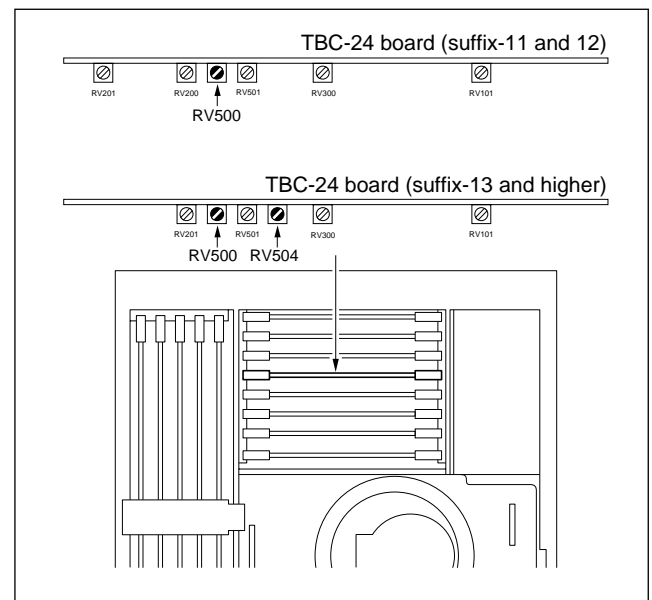
Specifications: A =  $0 \pm 10$  ns  
B =  $0 \pm 10$  ns

### Note

RV504 is not equipped on the TBC-24 board of board number suffixes 11 and 12.  
Therefore, adjust RV500 only.



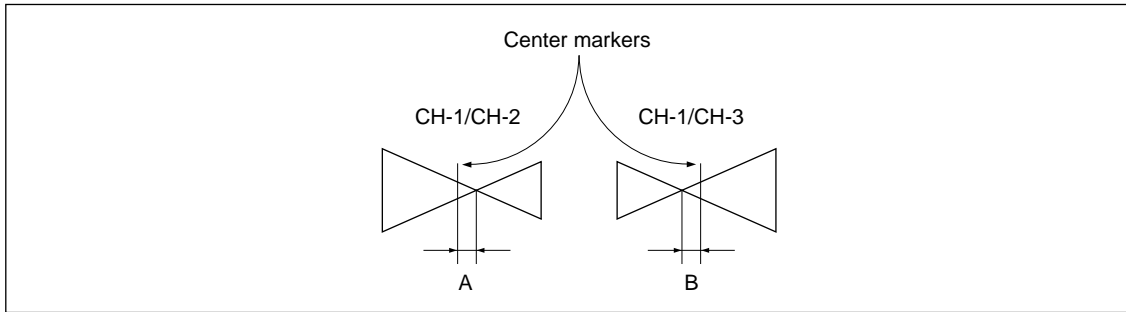
- (10) Eject the alignment tape CR5-1B/CR5-1B PS.



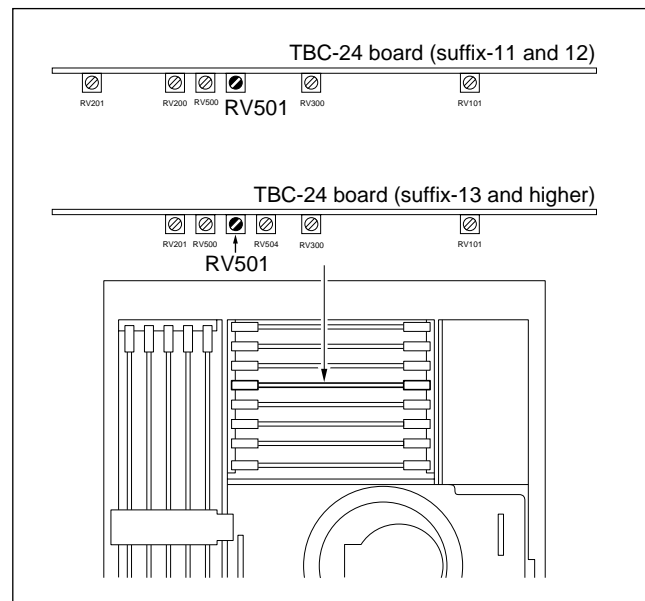
RV500 and RV504 on TBC-24 Board

### OXIDE adjustment [to step (13)]

- (11) Playback the bowtie signal portion (6:00 to 9:00) of the alignment tape CR5-2A or CR5-2A PS.  
(DNW-A100/A50/A45: CR5-2A, DNW-A100P/A50P/A45P: CR5-2A PS)
- (12) Adjust the deviations A and B between each center marker and bowtie dip point of CH-1/CH-2 (Y/B-Y) and CH-1/CH-3 (Y/R-Y).  
Adjustment point: ●RV501/TBC-24(C-1)  
Specifications:     A =  $0 \pm 10$  ns  
                          B =  $0 \pm 10$  ns



- (13) Eject the alignment tape CR5-2A/CR5-2A PS.



RV501 on TBC-24 Board



## 6-9. VPR-17 Board Replacement

The electrical adjustments are essential after the VPR-17 board is replaced.

### Note

When the VPR-17 board is replaced, the adjustments for both 525/60 and 625/50 systems are required. Be sure to perform all adjustments to maintain the all functions even if that DNW is not carried out the 525/625 system switching.

In the section 6-9, expresses the 525/60 and 625/50 systems as follows:

Model	525/60 system	625/50 system
DNW-A100/A50/A45	Standard system	Another system
DNW-A100P/A50P/A45P	Another system	Standard system

To performed the electrical adjustments, the following equipment and fixtures are required.

- Composite video signal generator (Sign is SG1.)  
For DNW-A100/A50/A45: TEKTRONIX TSG-170A or equivalent  
For DNW-A100P/A50P/A45P: TEKTRONIX TSG-271 or equivalent
- Composite video signal generator (Sign is SG2.)  
For DNW-A100/A50/A45: TEKTRONIX 1410 or equivalent  
For DNW-A100P/A50P/A45P: TEKTRONIX 1411 or equivalent
- Composite waveform/vector monitor  
For DNW-A100/A50/A45: TEKTRONIX 1750, 1780R, or equivalent  
For DNW-A100P/A50P/A45P: TEKTRONIX 1751, 1781R, or equivalent
- Oscilloscope: TEKTRONIX 2465B or equivalent
- Component waveform monitor: TEKTRONIX WFM300 or equivalent
- Frequency counter: ADVANTEST TR5821AK or equivalent
- Extension board: EX-555 (SONY part No. A-8277-211-A)
- 75  $\Omega$  terminators (3 pcs.)
- 75  $\Omega$  BNC T adapter (1 pc.)
- Composite video monitor(s): Sony's BVM series, PVM series, etc.

### Notes

- For NTSC (525/60 system) and PAL (625/50 system) are required.
- Having the switchable monitor of the NTSC and PAL is a convenience.

### 6-9-1. Replacement Procedure

#### Note

Turn off the POWER switch before starting the replacement.

- (1) Remove the upper lid and board retainer(L). (Refer to “6-1-3. Plug-in Board Pulling out/Insertion”.)
- (2) Replace the VPR-17 board. (Refer to Section 6-1-3.)
- (3) Perform the electrical adjustments (Section 6-9-2).

#### Note

The extension board is used some part of the electrical adjustments.

- (4) Return the states of S1100-1 on the SS-63 board, control panels, and connector panel to their previous states.
- (5) Turn off the POWER switch, then wait for 30 seconds.
- (6) Reattach the board retainer(L) and upper lid. (Refer to Section 6-1-3.)

## 6-9-2. Electrical Adjustments

### Adjustment Items

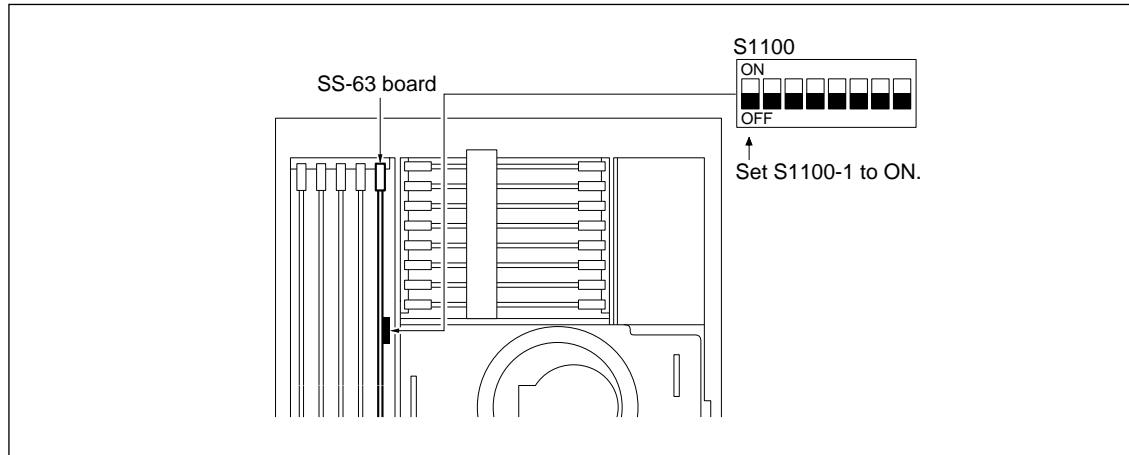
No.	Item	Adjustment point	Notes
0	Preparation		
1	Composite video output level adjustment		
	CH1/CH2	A20 : VPR VR : VIDEO 1/2 LEVEL	VIDEO OUTPUT COMPOSITE 1/2
	CH3	A20 : VPR VR : VIDEO 3 LEVEL	VIDEO OUTPUT COMPOSITE 3
	Data save	A2F : NV-RAM CONTROL	
2	Component video output level adjustment		
	Y	A20 : VPR VR : Y OUTPUT LEVEL	VIDEO OUTPUT COMPONENT Y
	R-Y	A20 : VPR VR : R-Y OUTPUT LEVEL	VIDEO OUTPUT COMPONENT R-Y
	B-Y	A20 : VPR VR : B-Y OUTPUT LEVEL	VIDEO OUTPUT COMPONENT B-Y
	Data save	A2F : NV-RAM CONTROL	
3	Component video output (BETACAM) level adjustment (For DNW-A100/A50/A45 only)		
	R-Y	A20 : VPR VR : B-CAM R-Y OUT LEVEL	VIDEO OUTPUT COMPONENT R-Y
	B-Y	A20 : VPR VR : B-CAM B-Y OUT LEVEL	VIDEO OUTPUT COMPONENT B-Y
	Data save	A2F : NV-RAM CONTROL	
4	Component video output phase confirmation		
	—		VIDEO OUTPUT COMPONENT
5	Reference color frame pulse confirmation (Note 1)		
		A20 : VPR VR : REF 1st FLD DET	TP502/VPR-17(F-3)
	Data save	A2F : NV-RAM CONTROL	
6	Internal 4fsc frequency adjustment		
		A20 : VPR VR : INT 4Fsc FREQ	TP501/VPR-17(A-1)
	Data save	A2F : NV-RAM CONTROL	
7	Standard system completion		
8	Preparation (Another system)		
9	Composite video output level adjustment (Another system)		
	CH1/CH2	A20 : VPR VR : VIDEO 1/2 LEVEL	VIDEO OUTPUT COMPOSITE 1/2
	CH3	A20 : VPR VR : VIDEO 3 LEVEL	VIDEO OUTPUT COMPOSITE 3
	Data save	A2F : NV-RAM CONTROL	
10	Component video output level adjustment (Another system)		
	Y	A20 : VPR VR : Y OUTPUT LEVEL	VIDEO OUTPUT COMPONENT Y
	R-Y	A20 : VPR VR : R-Y OUTPUT LEVEL	VIDEO OUTPUT COMPONENT R-Y
	B-Y	A20 : VPR VR : B-Y OUTPUT LEVEL	VIDEO OUTPUT COMPONENT B-Y
	Data save	A2F : NV-RAM CONTROL	
11	Component video output (BETACAM) level adjustment (Another system) (For DNW-A100P/A50P/A45P only)		
	R-Y	A20 : VPR VR : B-CAM R-Y OUT LEVEL	VIDEO OUTPUT COMPONENT R-Y
	B-Y	A20 : VPR VR : B-CAM B-Y OUT LEVEL	VIDEO OUTPUT COMPONENT B-Y
	Data save	A2F : NV-RAM CONTROL	
12	Another system completion		

Note 1: If the specification is not satisfied, change the adjustment data.

## 0. Preparation

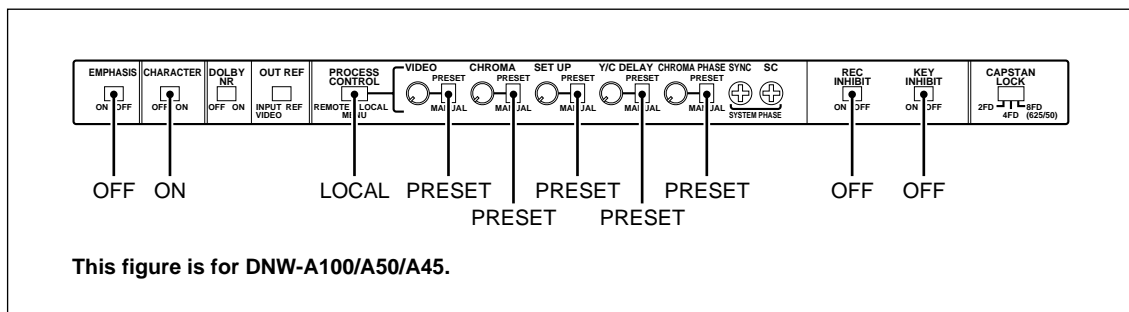
### Setting of DNW

(1) Set S1100-1 on SS-63 board to ON to treat the extended menu of the setup menu.



**S1100 on SS-63 Board**

(2) Set the sub control and connector panels as shown below.



- (3) Turn on the POWER switch of DNW, then confirm that the operation system is in the standard system.

**Note**

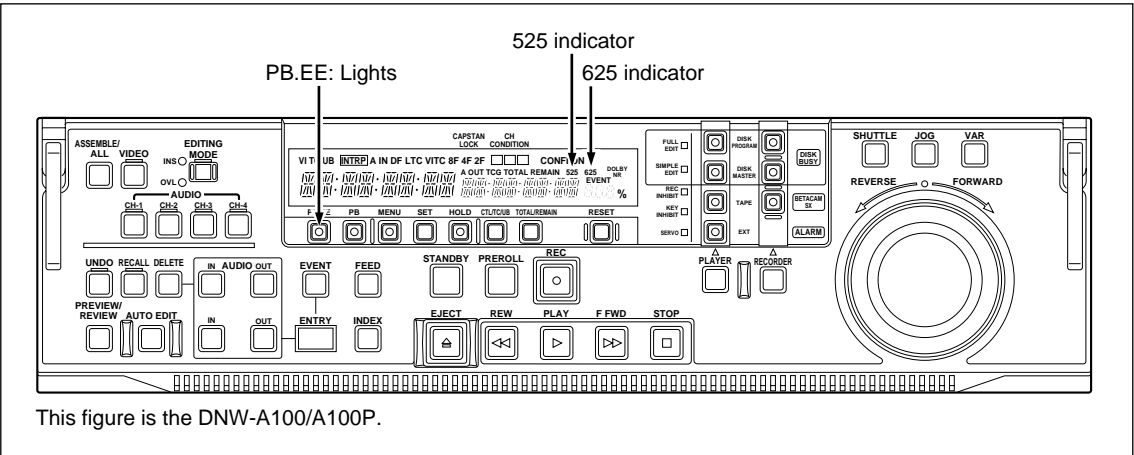
The operation system can confirm with the 525 or 625 indicator on the lower control panel.  
If DNW is under another system, return it to the standard system with the setup menu ITEM-013 : 525/625 SYSTEM SELECT. (Refer to Section 7-2-2 in the operation manual.)

**Importance**

If the 525/625 line system is changed, the signal that had recorded on the HDD is erased.

Model	Standard system	Another system
DNW-A100/A50/A45	Lights 525 indicator	Lights 625 indicator
DNW-A100P/A50P/A45P	Lights 625 indicator	Lights 525 indicator

- (4) To light the PB.EE indicator, push the PB.EE button on the lower control panel.



Lower Control Panel

- (5) Setting of the setup extend menu (in the standard system)  
For DNW-A100P/A50P/A45P: None.  
For DNW-A100/A50/A45:  
Set the SUB-ITEMs of ITEM-709 and ITEM-713 as shown below.

**Note**

Return the SUB-ITEMs to their previous settings in “7. Standard System Completion” (after adjustments in the standard system are completed).

ITEM	SUB-ITEM	Setting	Previous setting (fill up)
709 : CAV LEVEL FORMAT	1. OUTPUT CAV LEVEL	B-CAM	
713 : VIDEO SETUP REFERENCE LEVEL	0. MASTER LEVEL	0.0%	
	1. INPUT LEVEL	MSTER	
	2. V BLK REMOVE CNT	REMOV	
	3. BETACAM PB LEVEL	MSTER	
	4. OUTPUT LEVEL	MSTER	

## For the maintenance mode

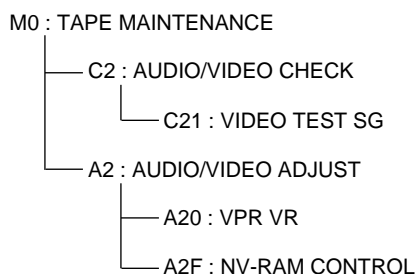
The operation of the maintenance mode is described as follows:

### • Entering the maintenance mode

Press S1101 (G-1) on the SS-63 board.

#### Note

The sub modes and menus of the maintenance mode that are used after replacing the VPR-17 board are as shown below.



### • Shifting to the next menu

- (1) Press the JOG button once to enter the JOG mode.
- (2) To set the cursor (\* mark) to the desired menu (mode), turn the search dial.
- (3) Press the SET button once.

### • Exiting from the current menu (mode)

Press the MENU button once.

#### Note

To exit from the maintenance mode, press the MENU button several times.

### • Changing the data value

- (1) To set the cursor (\* mark) to the item, turn the search dial.
- (2) Turn the search dial slowly while pressing the JOG button. = **Data value changes.**

REVERSE direction: the data value decreases (FF follows 00)

FORWARD direction: the data value increases (00 follows FF)

#### Note

During adjustment, change the rotational direction of the search dial watching to the change of waveform that is displayed on the measuring equipment.

### • Saving the data

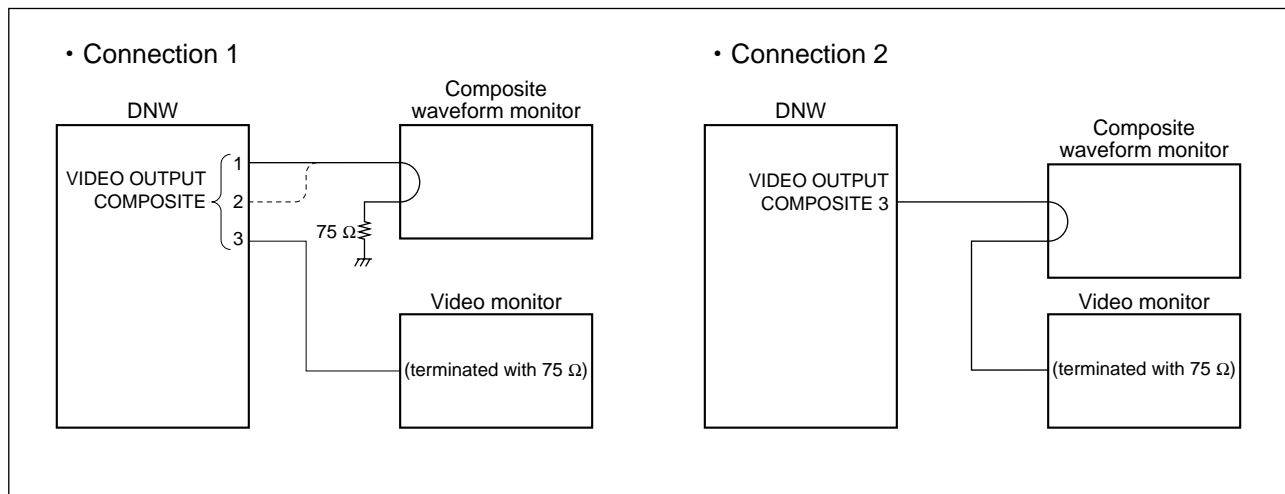
- (1) To set the cursor (\* mark) to A2F : NV-RAM CONTROL, turn the search dial.
- (2) Press the SET button once.
- (3) To set the cursor (\* mark) to "SAVE ALL ADJUST DATA", turn the search dial.
- (4) Press the SET button once.

## 1. Composite Video Output Level Adjustment

### Note

More than 30 minutes should elapse after turning the power on, then perform the adjustment (confirmation).

Measuring equipment: Composite waveform monitor



- (1) Connect the composite waveform monitor and video monitor as shown above figure's Connection 1.
- (2) To enter the maintenance mode, press S1101 (G-1) on the SS-63 board.
- (3) Enter C2 : AUDIO/VIDEO CHECK.
- (4) Enter C21 : VIDEO TEST SG.
- (5) Video test signal choice  
 To display the following test signal name on the video monitor, turn the search dial slowly with the JOG button pressing.  
 DNW-A100/A50/A45: 75% Color Bars  
 DNW-A100P/A50P/A45P: 100% Color Bars
- (6) To exit C21 : VIDEO TEST SG, press the MENU button once.
- (7) To exit C2 : AUDIO/VIDEO CHECK, press the MENU button once again.
- (8) Enter A2 : AUDIO/VIDEO ADJUST.
- (9) Enter A20 : VPR VR.

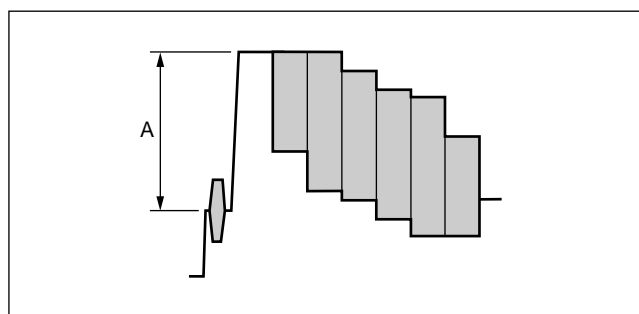
## (10) Confirmation (Adjustment)

Connect the composite waveform monitor to each VIDEO OUTPUT COMPOSITE connector and confirm each white peak level.

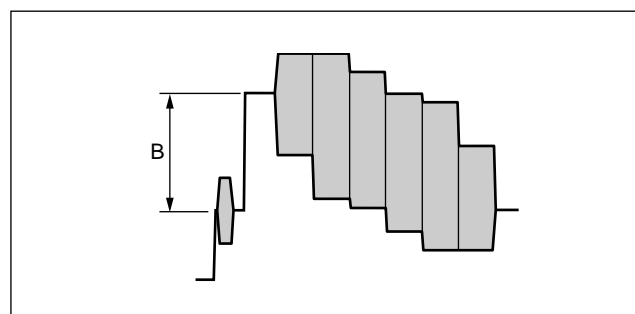
If the specification is not satisfied, perform the adjustment.

- The outputs of VIDEO OUTPUT COMPOSITE 1 and 2 connectors cannot adjust separately.
- When confirming/adjusting the output of VIDEO OUTPUT COMPOSITE 3 (SUPER) connector, change the connection of the video monitor as Connection 2 on the opposite page.
- The picture of the maintenance mode is superimposed in the output of VIDEO OUTPUT COMPOSITE 3 (SUPER) connector. But, it is no problem to confirm the white peak level of the color bars signal.

Observation channel [Connection]	Adjustment point (A20 : VPR VR)	Specification for DNW-A100/A50/A45	Specification for DNW-A100P/A50P/A45P
COMPOSITE 1 [Connection 1]	VIDEO 1/2 LEVEL		
COMPOSITE 2 [Connection 1]	VIDEO 1/2 LEVEL	A = $100 \pm 1$ IRE	B = $700 \pm 7$ mV
COMPOSITE 3 [Connection 2]	VIDEO 3 LEVEL	(A = $714 \pm 7$ mV)	



DNW-A100/A50/A45



DNW-A100P/A50P/A45P

(11) To exit the A20 : VPR VR, press the MENU button once.

Perform following steps (12) through (14) when the adjustment in step (10) is performed.

## (12) Data save

Enter A2F : NV-RAM CONTROL, then execute "SAVE ALL ADJUST DATA".

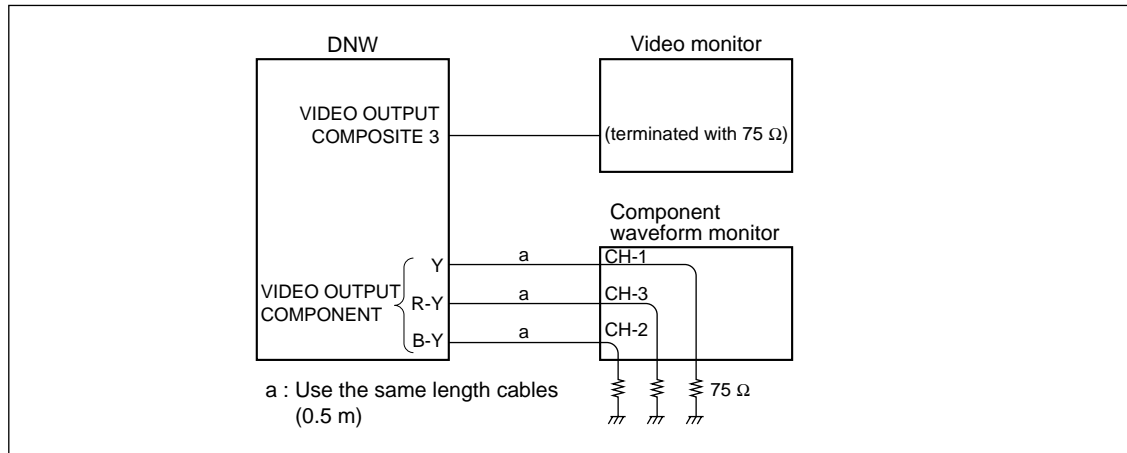
(13) Check that the message "Save Complete" is displayed on the video monitor.

(14) To exit A2F : NV-RAM CONTROL, press the MENU button once.

(15) To exit the maintenance mode, press the MENU button three times.

## 2. Component Video Output Level Adjustment

Measuring equipment: Component waveform monitor



- (1) Connect the component waveform monitor and video monitor as shown above figure.
- (2) For DNW-A100/A50/A45 only  
Set SUB-ITEM 1 : OUTPUT CAV LEVEL of the setup extended menu ITEM-709 : CAV LEVEL FORMAT to "D-1".
- (3) To enter the maintenance mode, press S1101 (G-1) on the SS-63 board.
- (4) Enter C2: AUDIO/VIDEO CHECK.
- (5) Enter C21: VIDEO TEST SG.
- (6) Video test signal choice  
To display the test signal name "100% Color Bars" on the video monitor, turn the search dial slowly while pressing the JOG button.
- (7) To exit C21: VIDEO TEST SG, press the MENU button once.
- (8) To exit C2: AUDIO/VIDEO CHECK, press the MENU button once again.
- (9) Enter A2 : AUDIO/VIDEO ADJUST.
- (10) Enter A20 : VPR VR.



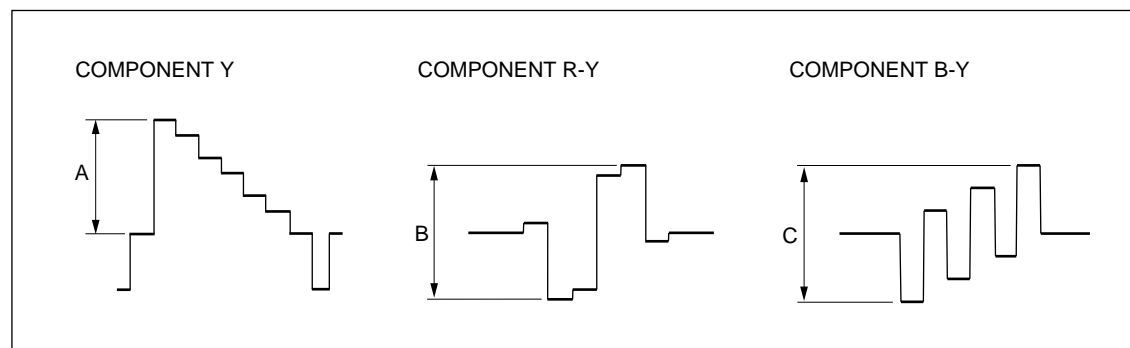


## (11) Confirmation (Adjustment)

Confirm each specified part's level of VIDEO OUTPUT COMPONENT outputs.

If the specification is not satisfied, perform the adjustment.

Observation component	Adjustment point (A20 : VPR VR)	Specification
Y	Y OUTPUT LEVEL	$A = 700 \pm 7 \text{ mV}$
R-Y	R-Y OUTPUT LEVEL	$B = 700 \pm 7 \text{ mV p-p}$
B-Y	B-Y OUTPUT LEVEL	$C = 700 \pm 7 \text{ mV p-p}$



(12) To exit A20 : VPR VR, press the MENU button once.

Perform following steps (13) through (15) when the adjustment in step (11) is performed.

## (13) Data save

Enter A2F : NV-RAM CONTROL, then execute "SAVE ALL ADJUST DATA".

(14) Check that the message "Save Complete" is displayed on the video monitor.

(15) To exit A2F : NV-RAM CONTROL, press the MENU button once.

(16) To exit the maintenance mode, press the MENU button three times.

## (17) For DNW-A100/A50/A45 only

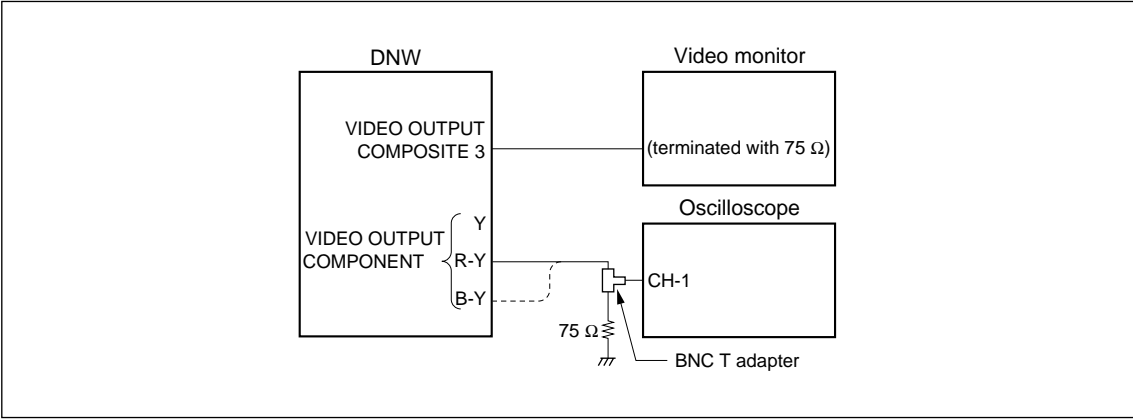
Set SUB-ITEM 1 : OUTPUT CAV LEVEL of the setup extended menu ITEM-709 : CAV LEVEL FORMAT to "B-CAM".

3. Component Video Output (BETACAM) Level Adjustment

Note

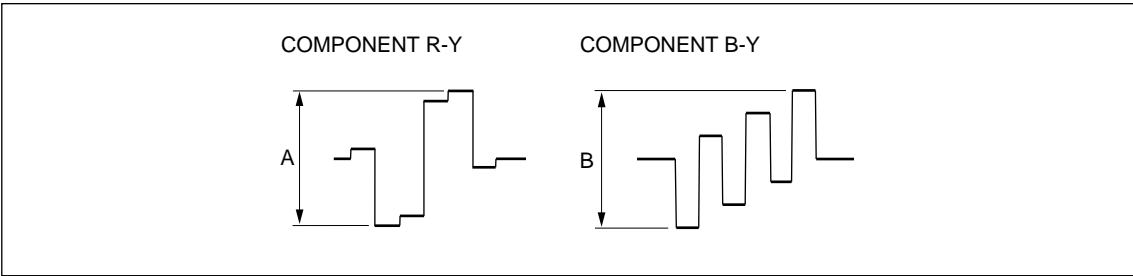
Perform this adjustment for only DNW-A100/A50/A45.

Measuring equipment: Oscilloscope (Band width limit: ON)



- (1) Connect the oscilloscope (and video monitor) as shown above figure.
- (2) Set the oscilloscope's CH-1 as follows:  
CH-1: DC 100 mV/DIV, 10 μs/DIV  
Trigger: CH-1
- (3) To enter the maintenance mode, press S1101 (G-1) on the SS-63 board.
- (4) Enter C2 : AUDIO/VIDEO CHECK.
- (5) Enter C21 : VIDEO TEST SG.
- (6) Video test signal choice  
To display the test signal name "75% Color Bars" on the video monitor, turn the search dial slowly while pressing the JOG button.
- (7) To exit C21 : VIDEO TEST SG, press the MENU button once.
- (8) To exit C2 : AUDIO/VIDEO CHECK, press the MENU button once again.
- (9) Enter A2 : AUDIO/VIDEO ADJUST.
- (10) Enter A20 : VPR VR.
- (11) Confirmation (Adjustment)  
Connect the oscilloscope's CH-1 to each of VIDEO OUTPUT COMPONENT R-Y and B-Y connectors and confirm each output level.  
If the specification is not satisfied, perform the adjustment.

Observation component	Adjustment point (A20 : VPR VR)	Specification
R-Y	B-CAM R-Y OUT LEVEL	A = 757 ±7 mV p-p
B-Y	B-CAM B-Y OUT LEVEL	B = 757 ±7 mV p-p



(12) To exit A20 : VPR VR, press the MENU button once.

Perform following steps (13) through (15) when the adjustment in step (11) is performed.

(13) Data save

Enter A2F : NV-RAM CONTROL, then execute "SAVE ALL ADJUST DATA".

(14) Check that the message "Save Complete" is displayed on the video monitor.

(15) To exit A2F : NV-RAM CONTROL, press the MENU button once.

(16) To exit the maintenance mode, press the MENU button three times.

#### 4. Component Video Output Phase Confirmation

Measuring equipment: Component waveform monitor

##### Note

Connection of the component waveform monitor is the same connection as "2. Component Video Output Level Adjustment".

(1) For DNW-A100/A50/A45 only

Set SUB-ITEM 1 : OUTPUT CAV LEVEL of the setup extended menu ITEM-709 : CAV LEVEL FORMAT to "D-1".

(2) To enter the maintenance mode, press S1101 (G-1) on the SS-63 board.

(3) Enter C2 : AUDIO/VIDEO CHECK.

(4) Enter C21 : VIDEO TEST SG.

(5) Video test signal choice

To display the test signal name "Bowtie" on the video monitor, turn the search dial slowly while pressing the JOG button.

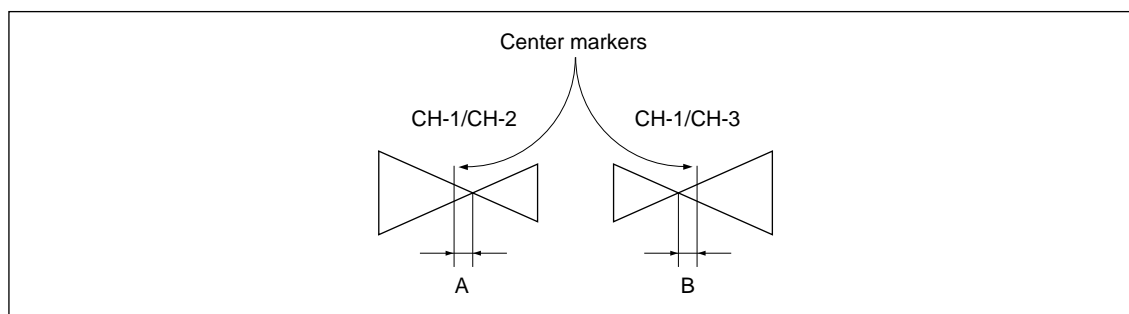
(6) To exit C21 : VIDEO TEST SG, press the MENU button once.

(7) Set the component waveform monitor to the BOWTIE mode.

(8) Confirm the deviations A and B between each center marker and bowtie dip point of CH-1/CH-2 (Y/B-Y) and CH-1/CH-3 (Y/R-Y).

Specifications:  $A = 0 \pm 10 \text{ ns}$

$B = 0 \pm 10 \text{ ns}$



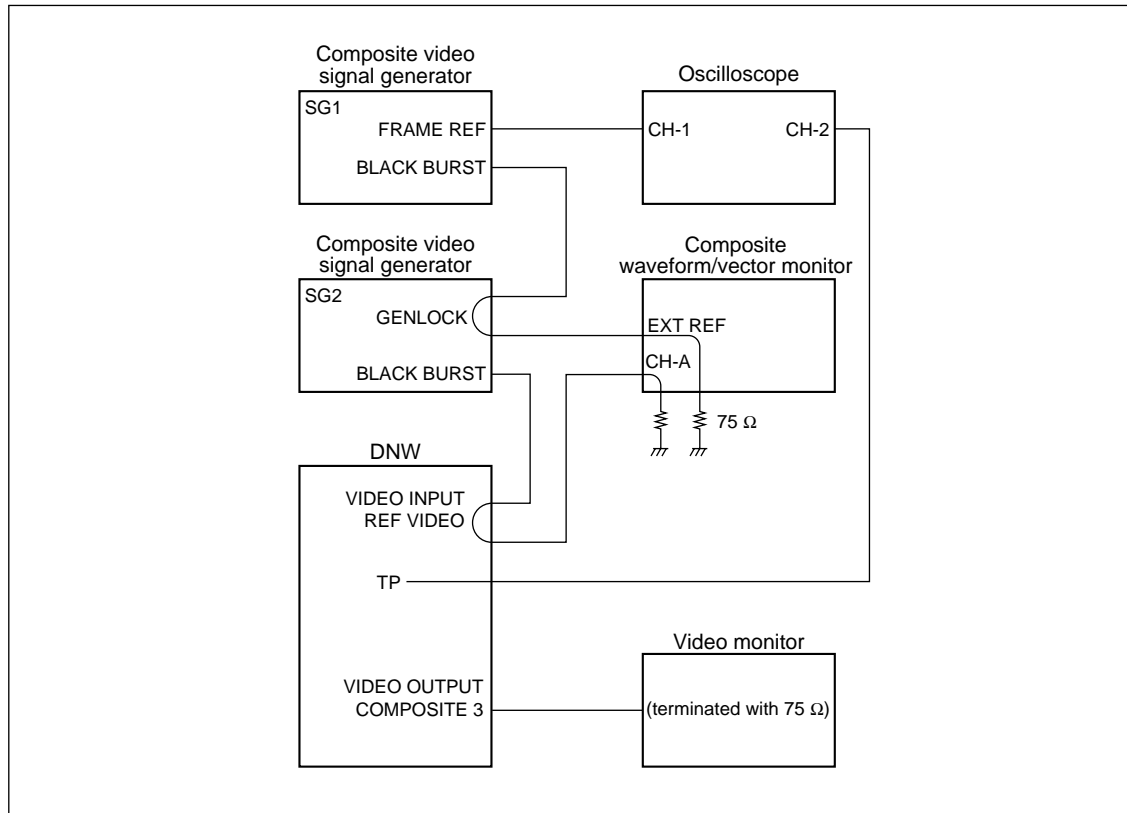
(9) To exit the maintenance mode, press the MENU button three times.

(10) For DNW-A100/A50/A45 only

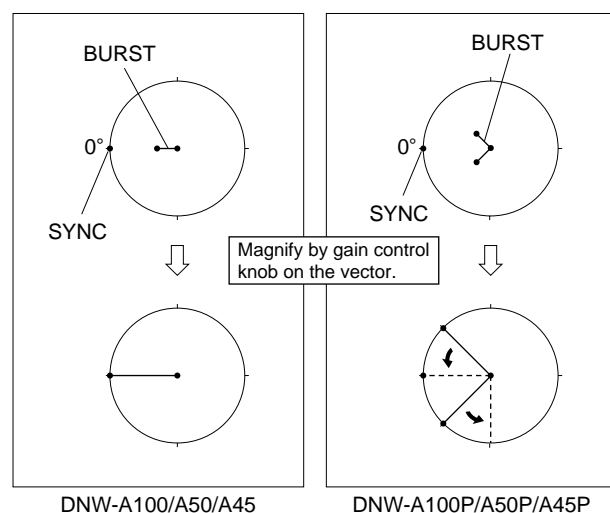
Set SUB-ITEM 1 : OUTPUT CAV LEVEL of the setup extended menu ITEM-709 : CAV LEVEL FORMAT to "B-CAM".

## 5. Reference Color Frame Pulse Confirmation

Measuring equipment: Component waveform/vector monitor and Oscilloscope



- (1) Turn off the POWER switch of DNW, then wait for 30 seconds.
- (2) Extended the VPR-17 board with an extension board.
- (3) Turn on the POWER switch.
- (4) Connect the video signal generators, component waveform/vector monitor (“vector” for short), oscilloscope, and video monitor as shown above figure.
- (5) Set the vector as follows:  
SCH mode, INPUT: CH-A, EXT REF
- (6) Align the SYNC phase to 0 degree using the vector’s PHASE knob so that the beam spot (SYNC) moves in the shortest route. (See the right figure.)
- (7) Align the BURST to regular position on the vector using the signal generator SG2’s SC PHASE knob.
- (8) Align the BURST’s beam spot(s) to the circle scale on the vector using the gain control (knob) on the vector.
- (9) For DNW-A100P/A50P/A45P only  
Align the BURST to the specified positions as the dotted lines of right figure using the vector’s PHASE knob.



- (10) Connect and set the oscilloscope as follows:

Display: ALT mode

CH-1: DC 2 V/DIV (Connected SG1's FRAME REF output)

CH-2: TP502/VPR-17 (F-3), DC 2 V/DIV, GND: E501/VPR-17 (G-1)

TIME: 10 ms/DIV for DNW-A100/A50/A45

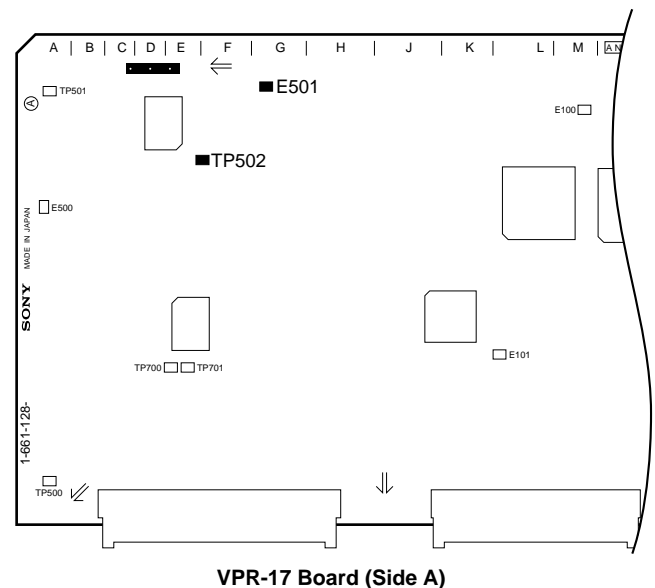
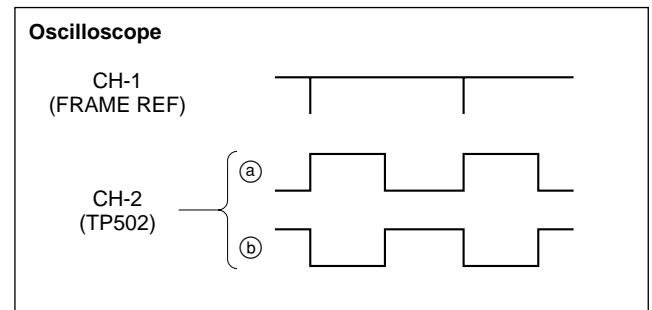
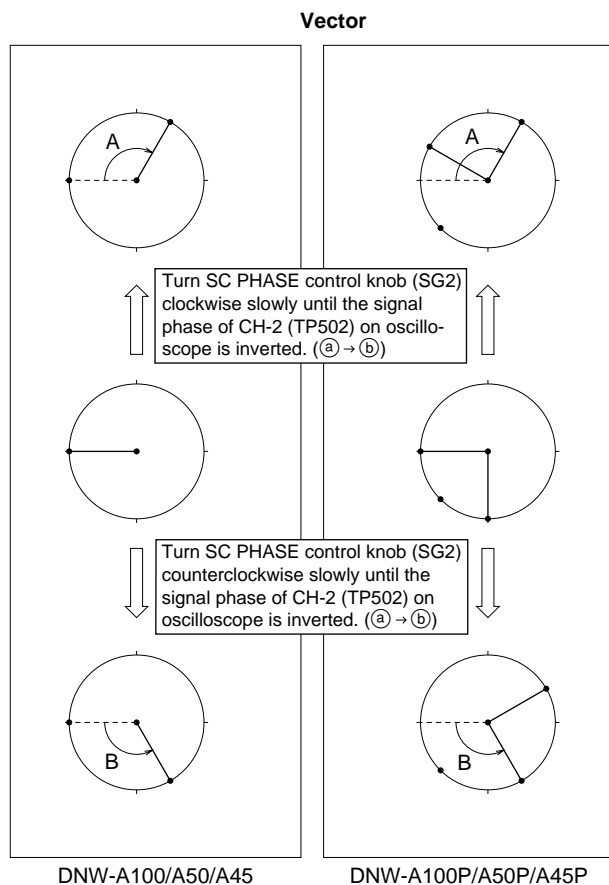
20 ms/DIV for DNW-A100P/A50P/A45P

Trigger: CH-1

- (11) Turn the signal generator SG2's SC PHASE control knob clockwise (↻) slowly until the waveform of the oscilloscope's CH-2 (TP502) changes from (a) to (b).
- (12) Measure the BURST phase (angle A) on the vector when just inverted the phase of CH-2 (TP502) on the oscilloscope.
- (13) To return the position of the BURST signal to be displayed on the vector, turn SG2's SC PHASE control knob counterclockwise (↺).
- (14) Turn the signal generator SG2's SC PHASE control knob counterclockwise (↺) slowly until the waveform of the oscilloscope's CH-2 (TP502) changes from (a) to (b).
- (15) Measure the BURST phase (angle B) on the vector when just inverted the phase of CH-2 (TP502) on the oscilloscope.
- (16) To return the position of the BURST signal to be displayed on the vector, turn SG2's SC PHASE control knob clockwise (↻).
- (17) Confirm that the difference between the angles A and B is within specification.

If the specification is not satisfied, perform the steps (18) through (21).

Specification:  $A - B = 0 \pm 10^\circ$



Perform following steps (18) through (21) only when the specification in step (17) is not satisfied.

(18) Enter A20 : VPR VR of the maintenance mode.

(19) Add/subtract 1 to/from the data value of "REF 1ST FLD DET".

**Note**

The data increase/decrease is dependent on the angles A and B measured in steps (12) and (15).

A > B : Subtract 1 from the data value.

(Turn the search dial to REVERSE direction while pressing the JOG button.)

A < B : Add 1 to the data value.

(Turn the search dial to FORWARD direction while pressing the JOG button.)

(20) To exit A20 : VPR VR, press the MENU button once.

(21) Return to step (11).

Perform following steps (22) through (24) only when REF 1ST FLD DET's data value is changed.

(22) Data save

Enter A2F : NV-RAM CONTROL, then execute "SAVE ALL ADJUST DATA".

(23) Check that the message "Save Complete" is displayed on the video monitor.

(24) To exit A2F : NV-RAM CONTROL, press the MENU button once.

## 6. Internal 4fsc Frequency Adjustment

Measuring equipment: Frequency counter

(1) Supply no signal to REF. VIDEO connector.

(2) Connect the frequency counter to TP501(A-1) on the VPR-17 board. GND: E500/VPR-17(A-5)

(3) Enter A20 : VPR VR of the maintenance mode.

(4) Adjust frequency as follows:

Adjustment point: A20 : VPR VR : INT 4FSC FREQ

Specification: 14,318,181  $\pm$  50 Hz for DNW-A100/A50/A45

17,734,476  $\pm$  50 Hz for DNW-A100P/A50P/A45P

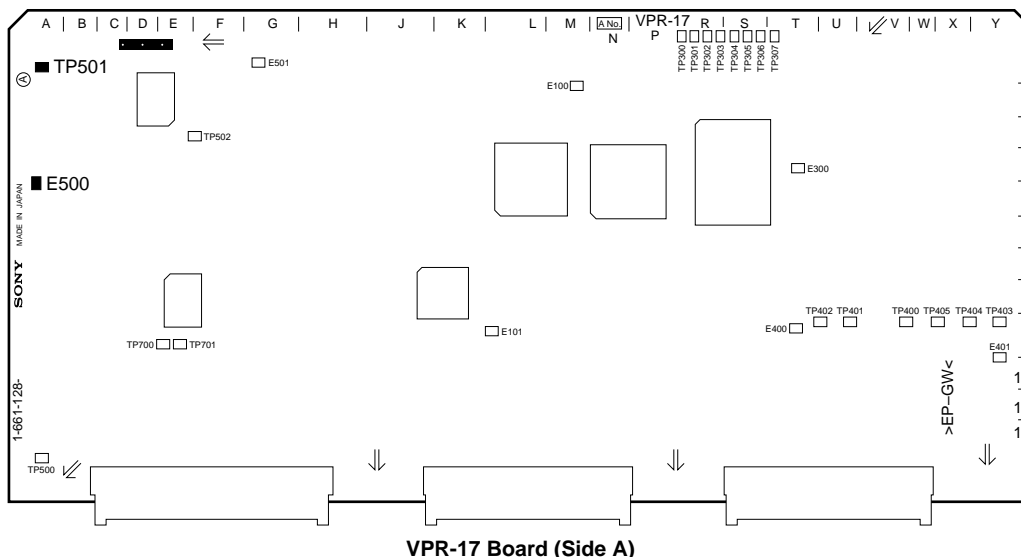
(5) To exit A20 : VPR VR, press the MENU button once.

(6) Data save

Enter A2F : NV-RAM CONTROL, then execute "SAVE ALL ADJUST DATA".

(7) Check that the message "Save Complete" is displayed on the video monitor.

(8) To exit the maintenance mode, press the MENU button three times.



## 7. Standard System Completion

- (1) Setup extended menu resetting (in the standard system)  
 For DNW-A100P/A50P/A45P: None.  
 For DNW-A100/A50/A45:  
 Return the SUB-ITEMs of the setup extended menus ITEM-709 and ITEM-713 to their previous settings in the standard system.
- (2) Turn off the POWER switch of DNW, then wait for 30 seconds.
- (3) Remove the VPR-17 board from the extension board, then pull out the extension board.
- (4) Insert the VPR-17 board.

## 8. Preparation (Another System)

- (1) Turn on the POWER switch of DNW.
- (2) Switch DNW to another system with the setup menu ITEM-013.  
 (Refer to Section 7-2-2 in the operation manual.)

### Note

Another system for DNW-A100/A50/A45 is the 625/50 system.  
 Another system for DNW-A100P/A50P/A45P is the 525/60 system.

### Importance

If the 525/625 system is changed, the signal that had recorded on the HDD is erased.

- (3) Connect the video monitor corresponding to another system to VIDEO OUTPUT COMPOSITE 3 (SUPER) connector.  
 Or, when using the switchable video monitor of NTSC (525/60) and PAL (625/50), switch its system.
- (4) When the PB.EE button on the lower control panel dose not stay lit up, press it once to light it.
- (5) Setup extended menu setting (Another system)  
 For DNW-A100/A50/A45: None.  
 For DNW-A100P/A50P/A45P:  
 Set the SUB-ITEMs of ITEM-709 and ITEM-713 as shown below.

### Note

Return the SUB-ITEMs to their previous settings in “12. Another System Completion” (after adjustments in another system are completed).

ITEM	SUB-ITEM	Setting Previous setting (fill up)
709 : CAV LEVEL FORMAT	1. OUTPUT CAV LEVEL	B-CAM
713 : VIDEO SETUP REFERENCE LEVEL	0. MASTER LEVEL	0.0%
	1. INPUT LEVEL	MSTER
	2. V BLK REMOVE CNT	REMOV
	3. BETACAM PB LEVEL	MSTER
	4. OUTPUT LEVEL	MSTER

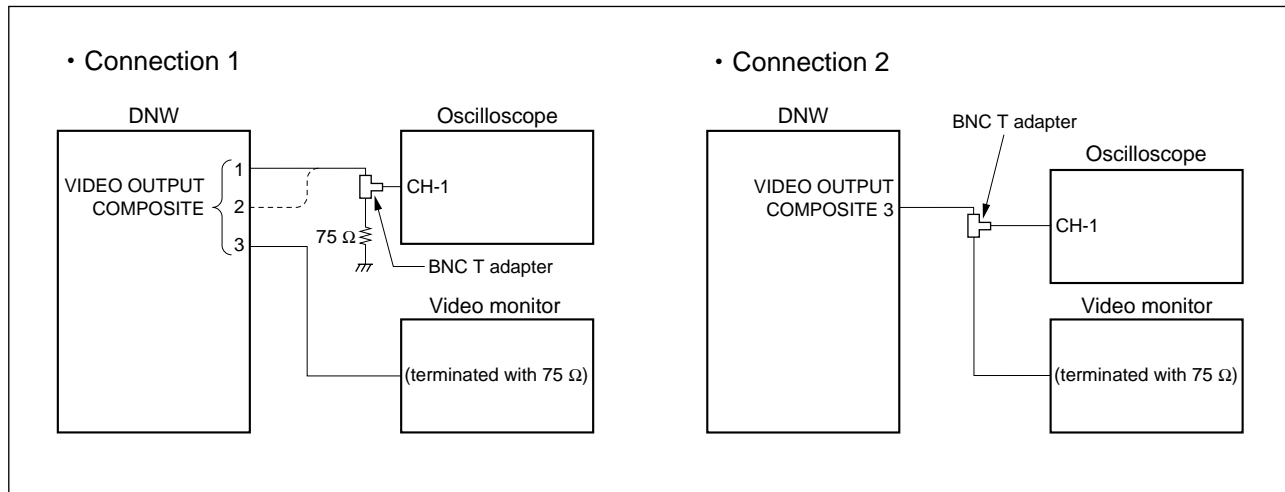
## 9. Composite Video Output Level Adjustment (Another System)

Measuring equipment: Oscilloscope (Band width limit: ON)

### Note

If the composite waveform monitor corresponding to another system is available, be sure to use it.

In this case, the connection is the same connection as “1. Composite Video Output Level Adjustment”.



- (1) Connect the oscilloscope (and video monitor) as shown above figure's Connection 1.
- (2) Set the oscilloscope as follows:  
 CH-1: DC 200 mV/DIV, 10  $\mu$ s/DIV  
 Trigger: CH-1, - slope, coupling: LINE
- (3) To enter the maintenance mode, press S1101 (G-1) on the SS-63 board.
- (4) Enter C2: AUDIO/VIDEO CHECK.
- (5) Enter C21: VIDEO TEST SG.
- (6) Video test signal choice  
 To display the following test signal name on the video monitor, turn the search dial slowly while pressing the JOG button.  
 DNW-A100/A50/A45: 100% Color Bars  
 DNW-A100P/A50P/A45P: 75% Color Bars
- (7) To exit C21 : VIDEO TEST SG, press the MENU button once.
- (8) To exit C2 : AUDIO/VIDEO CHECK, press the MENU button once again.
- (9) Enter A2 : AUDIO/VIDEO ADJUST.
- (10) Enter A20 : VPR VR.



## (11) Confirmation (Adjustment)

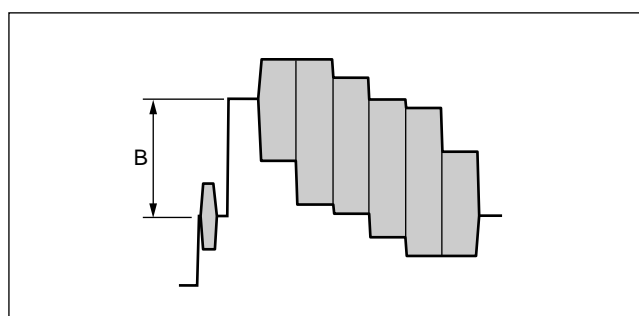
Connect the Oscilloscope's CH-1 to each VIDEO OUTPUT COMPOSITE connector and confirm each white peak level.

If the specification is not satisfied, perform the adjustment.

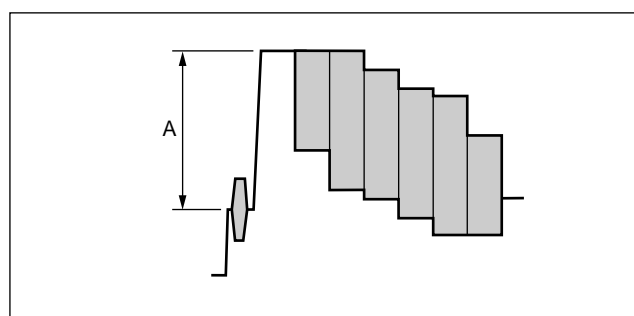
**Notes**

- The outputs of VIDEO OUTPUT COMPOSITE 1 and 2 connectors cannot adjust separately.
- When confirming/adjusting the output of VIDEO OUTPUT COMPOSITE 3 (SUPER) connector, change the connection of the video monitor as Connection 2 on the opposite page.
- The picture of the maintenance mode is superimposed in the output of VIDEO OUTPUT COMPOSITE 3 (SUPER) connector. But, it is no problem to confirm the white peak level of the color bars signal.

Observation channel [Connection]	Adjustment point (A20 : VPR VR)	Specification for DNW-A100/A50/A45	Specification for DNW-A100P/A50P/A45P
COMPOSITE 1 [Connection 1]	VIDEO 1/2 LEVEL		
COMPOSITE 2 [Connection 1]	VIDEO 1/2 LEVEL	B = $700 \pm 7$ mV	A = $714 \pm 7$ mV
COMPOSITE 3 [Connection 2]	VIDEO 3 LEVEL		



DNW-A100/A50/A45



DNW-A100P/A50P/A45P

(12) To exit A20 : VPR VR, press the MENU button once.

Perform following steps (13) through (15) when the adjustment in step (11) is performed.

## (13) Data save

Enter A2F : NV-RAM CONTROL, then execute "SAVE ALL ADJUST DATA".

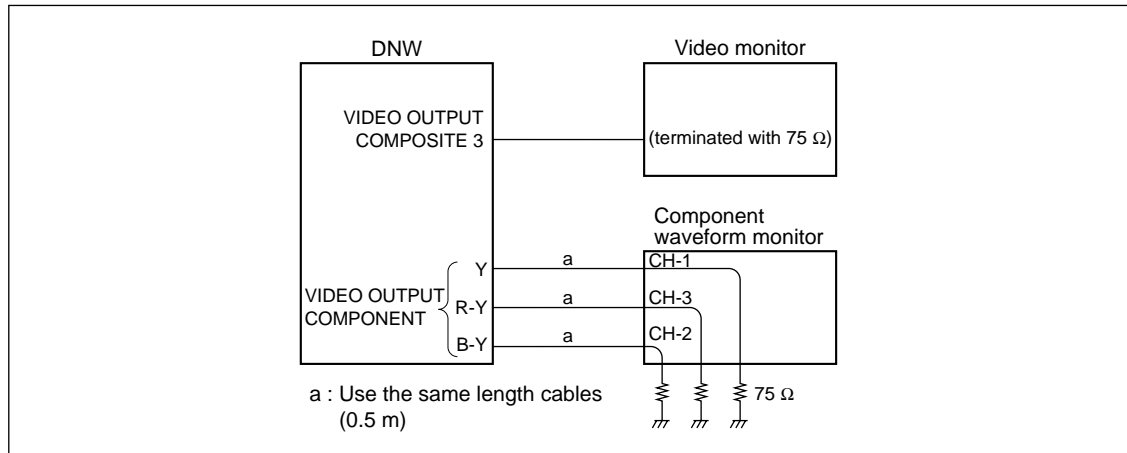
(14) Check that the message "Save Complete" is displayed on the video monitor.

(15) To exit A2F : NV-RAM CONTROL, press the MENU button once.

(16) To exit the maintenance mode, press the MENU button three times.

## 10. Component Video Output Level (Another System)

Measuring equipment: Component waveform monitor



- (1) Connect the component waveform monitor (and video monitor) as shown above figure.
- (2) For DNW-A100P/A50P/A45P only  
Set SUB-ITEM 1 : OUTPUT CAV LEVEL of the setup extended menu ITEM-709 : CAV LEVEL FORMAT to "D-1".
- (3) To enter the maintenance mode, press S1101 (G-1) on the SS-63 board.
- (4) Enter C2: AUDIO/VIDEO CHECK.
- (5) Enter C21: VIDEO TEST SG.
- (6) Video test signal choice  
To display the test signal name "100% Color Bars" on the video monitor, turn the search while pressing the JOG button.
- (7) To exit C21: VIDEO TEST SG, press the MENU button once.
- (8) To exit C2: AUDIO/VIDEO CHECK, press the MENU button once again.
- (9) Enter A2: AUDIO/VIDEO ADJUST.
- (10) Enter A20: VPR VR.

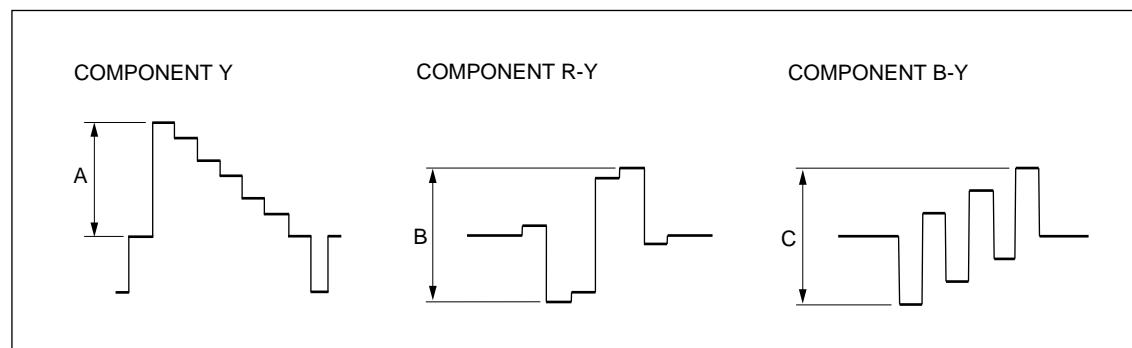


## (11) Confirmation (Adjustment)

Confirm each specified part's level of VIDEO OUTPUT COMPONENT outputs.

If the specification is not satisfied, perform the adjustment.

Observation component	Adjustment point (A20 : VPR VR)	Specification
Y	Y OUTPUT LEVEL	$A = 700 \pm 7 \text{ mV}$
R-Y	R-Y OUTPUT LEVEL	$B = 700 \pm 7 \text{ mV p-p}$
B-Y	B-Y OUTPUT LEVEL	$C = 700 \pm 7 \text{ mV p-p}$



(12) To exit A20 : VPR VR, press the MENU button once.

Perform following steps (13) through (15) when the adjustment in step (11) is performed.

## (13) Data save

Enter A2F : NV-RAM CONTROL, then execute "SAVE ALL ADJUST DATA".

(14) Check that the message "Save Complete" is displayed on the video monitor.

(15) To exit A2F : NV-RAM CONTROL, press the MENU button once.

(16) To exit the maintenance mode, press the MENU button three times.

## (17) For DNW-A100P/A50P/A45P only

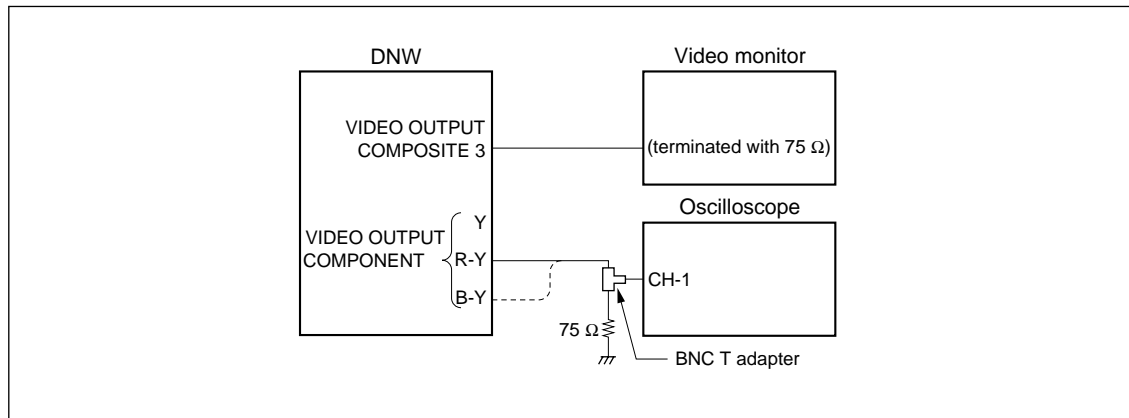
Set SUB-ITEM 1 : OUTPUT CAV LEVEL of the setup extended menu ITEM-709 : CAV LEVEL FORMAT to "B-CAM".

## 11. Component Video Output (BETACAM) Level Adjustment (Another System)

### Note

Perform this adjustment for only DNW-A100P/A50P/A45P.

Measuring equipment: Oscilloscope (Band width limit: ON)



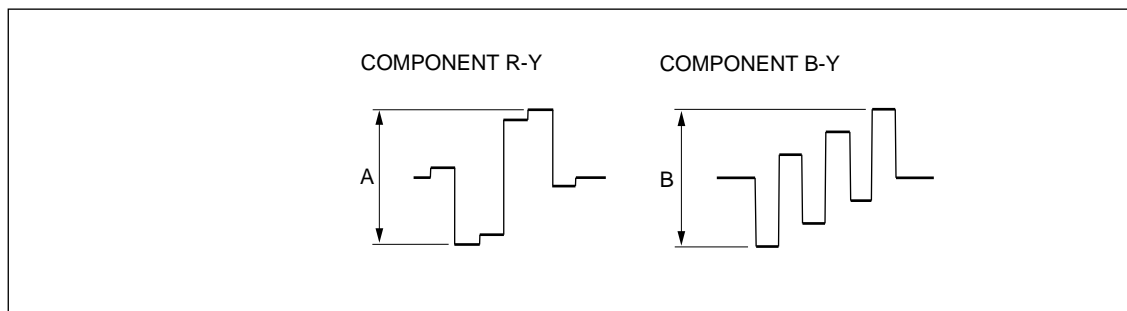
- (1) Connect the oscilloscope (and video monitor) as shown above figure.
- (2) Set the oscilloscope as follows:  
 CH-1: DC 100 mV/DIV, 10 μs/DIV  
 Trigger: CH-1
- (3) To enter the maintenance mode, press S1101 (G-1) on the SS-63 board.
- (4) Enter C2 : AUDIO/VIDEO CHECK.
- (5) Enter C21 : VIDEO TEST SG.
- (6) Video test signal choice  
 To display the test signal name “75% Color Bars” on the video monitor, turn the search dial slowly while pressing the JOG button.
- (7) To exit C21 : VIDEO TEST SG, press the MENU button once.
- (8) To exit C2 : AUDIO/VIDEO CHECK, press the MENU button once again.
- (9) Enter A2 : AUDIO/VIDEO ADJUST.
- (10) Enter A20 : VPR VR.

## (11) Confirmation (Adjustment)

Connect the oscilloscope's CH-1 to each of VIDEO OUTPUT COMPONENT R-Y and B-Y connectors and confirm each output level.

If the specification is not satisfied, perform the adjustment.

Observation component	Adjustment point(A20 : VPR VR)	Specification
R-Y	B-CAM R-Y OUT LEVEL	$A = 757 \pm 7 \text{ mV p-p}$
B-Y	B-CAM B-Y OUT LEVEL	$B = 757 \pm 7 \text{ mV p-p}$



(12) To exit A20 : VPR VR, press the MENU button once.

Perform following steps (13) through (15) when the adjustment in step (11) is performed.

## (13) Data save

Enter A2F : NV-RAM CONTROL, then execute "SAVE ALL ADJUST DATA".

(14) Check that the message "Save Complete" is displayed on the video monitor.

(15) To exit A2F : NV-RAM CONTROL, press the MENU button once.

(16) To exit the maintenance mode, press the MENU button three times.

## 12. Another System Completion

## (1) Setup extended menu resetting (Another system)

For DNW-A100/A50/A45: None.

For DNW-A100P/A50P/A45P:

Return the SUB-ITEMs of the setup extended menus ITEM-709 and ITEM-713 to their previous settings in another system.

## (2) Return DNW to the standard system with setup extended menu ITEM-013.

(Refer to Section 7-2-2 in the operation manual.)

**Note**

Standard system for DNW-A100/A50/A45 is the 525/60 system.

Standard system for DNW-A100P/A50P/A45P is the 625/50 system.



## Section 7

### Spare Parts

#### 7-1. Notes on Repair Parts

##### 1. Safety Related Components Warning

Components marked  $\triangle$  are critical to safe operation. Therefore, specified parts should be used in the case of replacement.

##### 2. Standardization of Parts

Some repair parts supplied by Sony differ from those used for the unit. These are because of parts commonality and improvement.

Parts list has the present standardized repair parts.

##### 3. Stock of Parts

Parts marked with “o” at SP (Supply Code) column of the spare parts list may not be stocked. Therefore, the delivery date will be delayed.

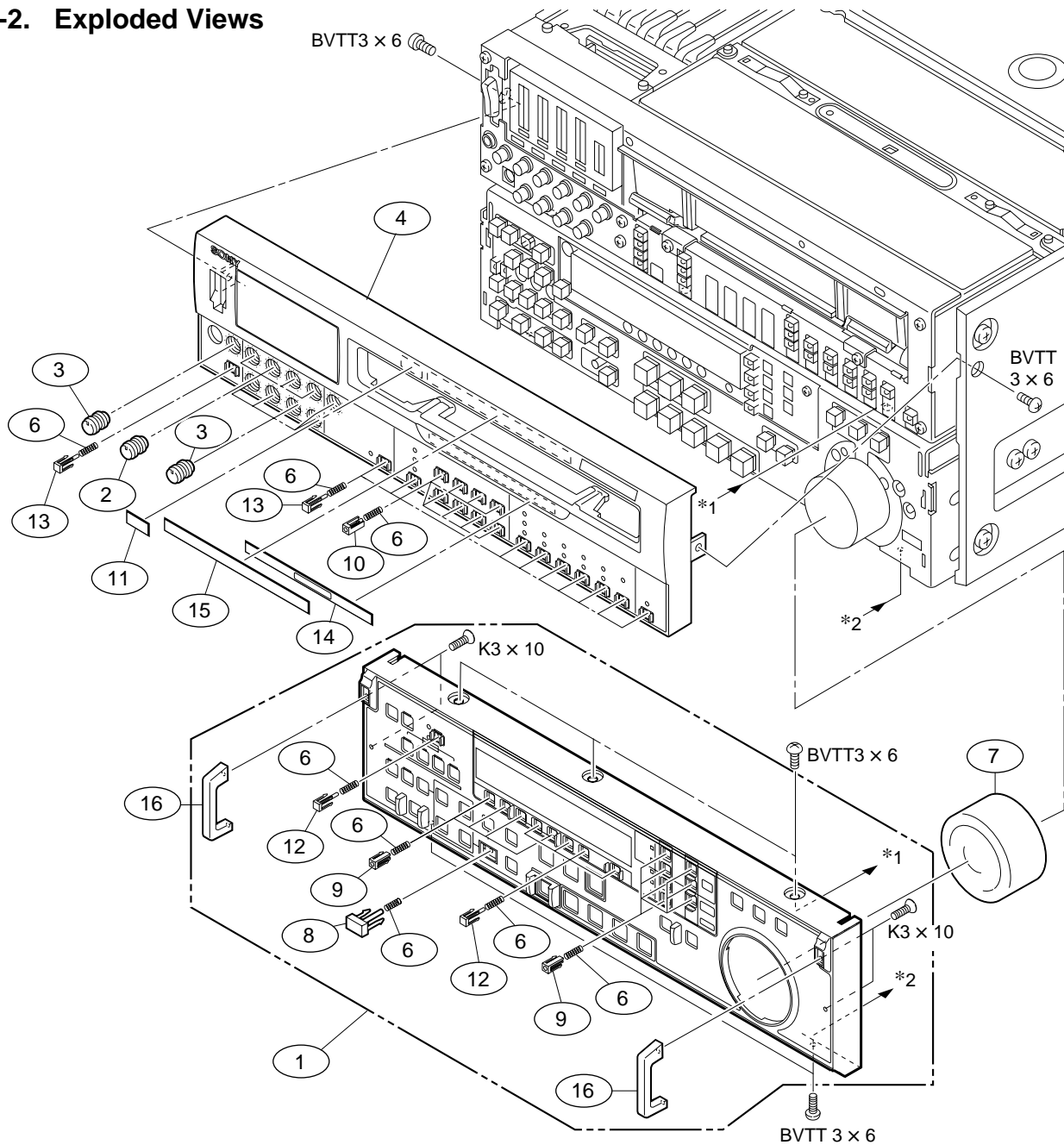
##### 4. Destination Representation

The part indicated For UC/EK in the spare parts list is used in the unit written below.

For UC : The part is used in a unit for the U.S.A. and Canada.

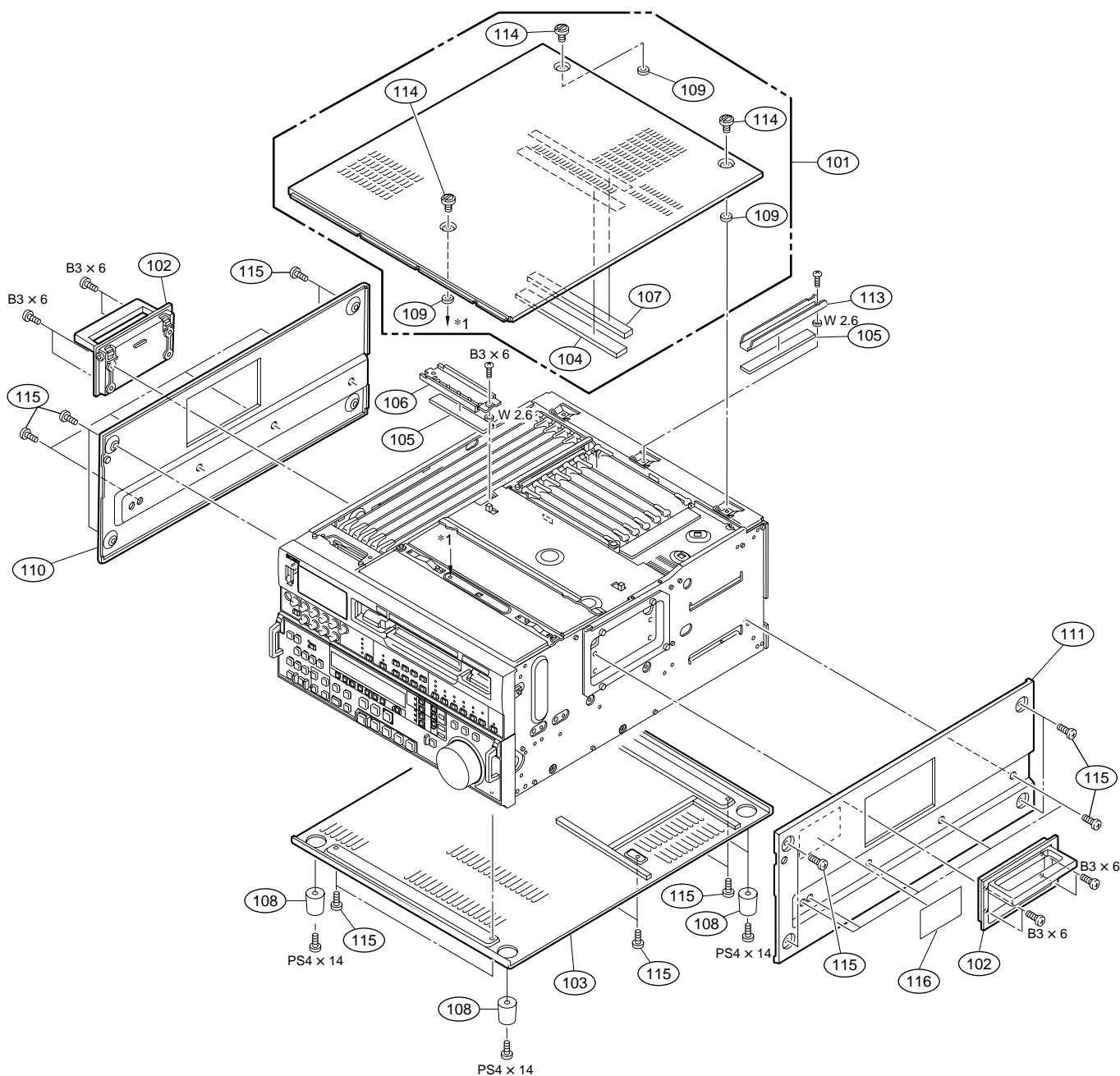
For EK : The part is used in a unit for regions except the above countries.

## 7-2. Exploded Views



No.	Part No.	SP Description	No.	Part No.	SP Description
1	A-8278-319-E	o PANEL ASSY, KEY(for DNW-A100/A100P)	11	3-184-994-03	o ISR STICKER (S)
	A-8278-393-D	o PANEL ASSY, KEY (for DNW-A50/A50P/A45/A45P)	12	3-696-774-02	s KEY TOP, 6x6(BLACK)
2	X-3167-824-1	o KNOB ASSY(RED), VOL	13	3-696-774-12	s KEY TOP, 6x6(GRAY)
3	X-3167-825-1	o KNOB ASSY(WHITE), VOL	14	3-604-812-02	o A/D LABEL(HIGH SPEED)(for DNW-A100/A100P)
4	X-3678-564-6	o PANEL SUB ASSY, FRONT (for DNW-A100/A100P)		3-604-813-01	o A/D LABEL(for DNW-A50/A50P/A45/A45P)
	X-3678-732-4	o PANEL SUB ASSY, FRONT (for DNW-A50/A50P/A45/A45P)	15	3-696-795-02	o LABEL, MODEL NAME(DNW-A100)
6	2-217-533-00	s SPRING, COMPRESSION		3-604-348-01	o LABEL, MODEL NAME(DNW-A100P)
7	3-180-633-04	s RUBBER, DIAL KNOB		3-604-354-01	o LABEL, MODEL NAME(DNW-A50)
8	3-180-817-02	s KEY TOP, 9x16		3-604-355-01	o LABEL, MODEL NAME(DNW-A50P)
9	3-180-822-05	s KEY TOP, 6x6(LED,BLACK)		3-604-352-01	o LABEL, MODEL NAME(DNW-A45)
10	3-180-822-12	s KEY TOP, 6x6(LED,GRAY)		3-604-353-01	o LABEL, MODEL NAME(DNW-A45P)
			16	3-717-425-31	o HANDLE
				7-685-247-19	s SCREW +K 3x10 TAPPING TYPE2
				7-685-871-09	s SCREW +BVTT 3x6(S)





No. Part No. SP Description

101	A-8278-584-A	o LID ASSY, UPPER
102	X-3642-018-3	o HANDLE ASSY
103	X-3678-563-3	o PLATE ASSY, BOTTOM
104	3-171-369-01	o LID(A), UPPER, AIR GUARD
105	3-171-410-01	o RETAINER(S), PC BOARD(COUSHION)
106	3-180-641-01	o PLATE(L), PC BOARD RETAINER
107	3-604-811-01	o LID(B), UPPER, AIR GUARD
108	3-604-930-01	s FOOT, RUBBER
109	3-688-102-01	o SPACER, M4
110	3-696-847-02	o CABINET (LEFT)

No. Part No. SP Description

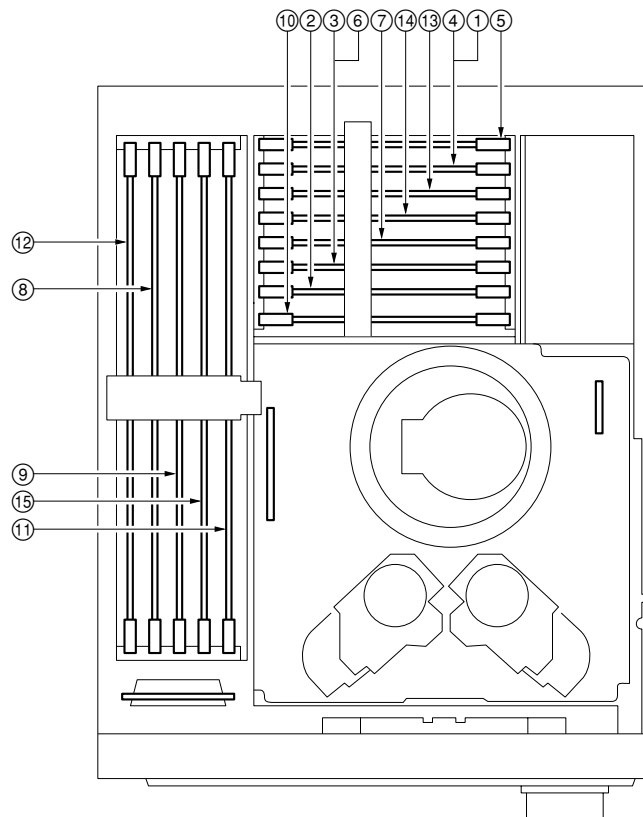
111	3-696-854-01	o RIGHT CABINET
112	3-696-882-02	o COUSHION(L), PC BOARD RETAINER
113	3-696-887-01	o RETAINER (S), PC BOARD
114	3-717-392-02	o SCREW, LID
115	3-733-690-01	s SCREW, +B 4x6
116	3-615-215-01	o CAUTION LABEL, SCREW
	7-623-923-01	s WASHER 2.6, NYLON
	7-682-547-09	s SCREW +B 3x6
	7-682-664-01	s SCREW +PS 4x14

### 7-3. Plug-in Boards

No.	Generic name	Part No.	SP Description
1	* AD-105	-----	BKNW-104
2	APR-12	A-8273-626-A	o MOUNTED CIRCUIT BOARD, APR-12 (for DNW-A100/A50/A45)
		A-8273-785-A	o MOUNTED CIRCUIT BOARD, APR-12P (for DNW-A100P/A50P/A45P)
3	APR-13	A-8273-619-A	o MOUNTED CIRCUIT BOARD, APR-13
4	* DEC-65	-----	BKDW-505 (for DNW-A100/A50/A45) BKDW-506 (for DNW-A100P/A50P/A45P)
5	DIF-42	A-8273-573-A	o MOUNTED CIRCUIT BOARD, DIF-42
6	* DIF-44	-----	BKNW-105
7	DM-89	A-8275-154-B	o MOUNTED CIRCUIT BOARD, DM-89 (for DNW-A100/A50/A45)
		A-8275-088-B	o MOUNTED CIRCUIT BOARD, DM-89P (for DNW-A100P/A50P/A45P)
8	DPR-71	A-8273-621-A	o MOUNTED CIRCUIT BOARD, DPR-71 (for DNW-A100/A100P)
		A-8277-938-A	o MOUNTED CIRCUIT BOARD, DPR-71B (for DNW-A50/A50P/A45/A45P)
9	DPR-73	A-8273-623-A	o MOUNTED CIRCUIT BOARD, DPR-73
10	EQ-56	A-8273-563-A	o MOUNTED CIRCUIT BOARD, EQ-56 (for DNW-A100/A100P)
		A-8277-937-A	o MOUNTED CIRCUIT BOARD, EQ-56B (for DNW-A50/A50P/A45/A45P)
11	SS-63	A-8273-560-A	o MOUNTED CIRCUIT BOARD, SS-63
12	** SSX	A-8273-628-A	o MOUNTED CIRCUIT BOARD, SSX-1
		A-8322-050-A	o MOUNTED CIRCUIT BOARD, SSX-2
13	TBC-23	A-8275-155-B	o MOUNTED CIRCUIT BOARD, TBC-23 (for DNW-A100/A50/A45)
		A-8275-271-B	o MOUNTED CIRCUIT BOARD, TBC-23PG (for DNW-A100P/A50P/A45P)
14	TBC-24	A-8275-156-A	o MOUNTED CIRCUIT BOARD, TBC-24 (for DNW-A100/A50/A45)
		A-8275-087-A	o MOUNTED CIRCUIT BOARD, TBC-24P (for DNW-A100P/A50P/A45P)
15	VPR-17	A-8273-571-A	o MOUNTED CIRCUIT BOARD, VPR-17 (for DNW-A100/A50/A45)
		A-8273-774-A	o MOUNTED CIRCUIT BOARD, VPR-17P (for DNW-A100P/A50P/A45P)

\*: Please order the standard products.

\*\*: Order the same SSX board as the SSX board used in your unit.



< Top View >

## 7-4. Packing Materials and Supplied Accessories

### For UC model

#### DNW-A100/A50/A45

#### DNW-A100P/A50P/A45P

Q'ty	Part No.	SP Description
1pc	△ 1-551-812-11	s CORD, POWER
1pc	1-774-818-11	o CONNECTOR, SQUARE TYPE (SCSI-3) (When using SSX-1 board)
1pc	1-794-076-11	s TERMINATOR (SCSI, LVD) (When using SSX-2 board)
1pc	2-990-242-01	s HOLDER (B), PLUG
1pc	3-193-088-01	o CUSHION (UPPER)
1pc	3-193-089-01	o CUSHION (LOWER)
1pc	3-181-535-01	o SPACER (A)
1pc	3-181-536-01	o SPACER (B)
1pc	3-696-874-02	o INDIVIDUAL CARTON (for DNW-A100)
	3-603-933-01	o INDIVIDUAL CARTON (for DNW-A100P)
	3-603-936-01	o INDIVIDUAL CARTON (for DNW-A50)
	3-603-937-01	o INDIVIDUAL CARTON (for DNW-A50P)
	3-603-934-01	o INDIVIDUAL CARTON (for DNW-A45)
	3-603-935-01	o INDIVIDUAL CARTON (for DNW-A45P)
4pcs	7-682-965-01	s SCREW +PSW 4x16

### For EK model

#### DNW-A100P/A50P/A45P

Q'ty	Part No.	SP Description
1pc	△ 1-590-910-11	s CORD SET, POWER
1pc	1-774-818-11	o CONNECTOR, SQUARE TYPE (SCSI-3) (When using SSX-1 board)
1pc	1-794-076-11	s TERMINATOR (SCSI, LVD) (When using SSX-2 board)
1pc	3-170-078-01	s HOLDER (B), PLUG
1pc	3-193-088-01	o CUSHION (UPPER)
1pc	3-193-089-01	o CUSHION (LOWER)
1pc	3-181-535-01	o SPACER (A)
1pc	3-181-536-01	o SPACER (B)
1pc	3-603-933-01	o INDIVIDUAL CARTON (for DNW-A100P)
	3-603-937-01	o INDIVIDUAL CARTON (for DNW-A50P)
	3-603-935-01	o INDIVIDUAL CARTON (for DNW-A45P)
4pcs	7-682-965-01	s SCREW +PSW 4x16

## 7-5. Fixtures List

Part No.      SP Description

- J-6035-070-A ○ EXTRACTION TOOL (for PLCC socket)
- J-6080-029-A ○ SMALL DENTAL MIRROR (Round type ø12)
- J-6086-570-A ○ REFERENCE FLAT PLATE
- J-6152-450-A ○ WIRE CLEARANCE CHECK GAUGE SET
- J-6190-800-A ○ TENSION REGULATOR SLANTNESS CHECK TOOL
  
- J-6251-090-A ○ TORQUE SCREWDRIVER'S HEXAGONAL BIT  
(d=2.5 mm, l=120 mm)
- J-6323-440-A ○ TORQUE SCREWDRIVER'S HEXAGONAL BIT  
(d=0.89 mm, l=50 mm)
  
- J-6323-420-A ○ TORQUE SCREWDRIVER'S BIT (+2 mm, l=75 mm)
- J-6323-430-A ○ TORQUE SCREWDRIVER'S BIT (+3 mm, l=90 mm)
- J-6252-510-A ○ TORQUE SCREWDRIVER (6 kg•cm) (0.6 N•m)
- J-6252-520-A ○ TORQUE SCREWDRIVER (12 kg•cm) (1.2 N•m)
  
- J-6269-810-A ○ EXTENSION BOARD (S), EX-377
- A-8277-211-A ○ EXTENSION BOARD (L), EX-555
- A-8277-212-A ○ EXTENSION BOARD (S), EX-556
- J-6320-870-A ○ REEL MOTOR SHAFT SLANTNESS CHECK FIXTURE
- J-6320-880-A ○ CASSETTE REFERENCE PLATE (L)
  
- J-6322-610-A ○ TAPE GUIDE ADJUSTMENT DRIVER
- J-6329-350-A ○ REEL TABLE HEIGHT GAUGE
- 1-782-030-11 ○ CABLE ASSY, FLAT (68 CORE)
- 1-952-684-11 ○ EXTENSION CABLE (14P)
  
- 1-957-071-11 ○ EXTENSION CABLE SET
- 3-184-527-01 ○ CLEANING CLOTH (15 cm x 15 cm)
- 7-432-114-11 ○ LOCKING COMPOUND, 1401B (200 g)
- 7-651-000-10 ○ SONY GREASE, SGL-601 (50 g)
- 7-661-018-18 ○ DIAMOND OIL, NT-68 (50 ml)
  
- 7-700-736-01 ○ L-SHAPED HEXAGONAL WRENCH (d=1.27 mm)
- 7-700-736-05 ○ L-SHAPED HEXAGONAL WRENCH (d=1.5 mm)
- 7-700-736-06 ○ L-SHAPED HEXAGONAL WRENCH (d=0.89 mm)
- 7-700-766-04 ○ HEXAGONAL WRENCH DRIVER (d=2.5 mm)
  
- 8-960-075-01 ○ ALIGNMENT TAPE, SR5-1 (for 525/60 system)
- 8-960-075-11 ○ ALIGNMENT TAPE, SR2-1 (for 525/60 system)
- 8-960-075-51 ○ ALIGNMENT TAPE, SR5-1P (for 625/50 system)
- 8-960-075-61 ○ ALIGNMENT TAPE, SR2-1P (for 625/50 system)
  
- 8-960-096-01 ○ ALIGNMENT TAPE, CR2-1B
- 8-960-096-41 ○ ALIGNMENT TAPE, CR5-1B (METAL PARTICLE TAPE)  
(for DNW-A100/A50/A45)
- 8-960-097-44 ○ ALIGNMENT TAPE, CR5-2A (OXIDE TAPE)  
(for DNW-A100/A50/A45)
- 8-960-097-45 ○ ALIGNMENT TAPE, CR8-1A (OXIDE TAPE)  
(for DNW-A100/A50/A45)
- 8-960-096-51 ○ ALIGNMENT TAPE, CR2-1B PS  
(for DNW-A100P/A50P/A45P)
  
- 8-960-096-91 ○ ALIGNMENT TAPE, CR5-1B PS (METAL PARTICLE TAPE)  
(for DNW-A100P/A50P/A45P)
- 8-960-096-86 ○ ALIGNMENT TAPE, CR8-1B PS (METAL PARTICLE TAPE)  
(for DNW-A100P/A50P/A45P)
- 8-960-098-44 ○ ALIGNMENT TAPE, CR5-2A PS (OXIDE TAPE)  
(for DNW-A100P/A50P/A45P)
- 8-960-098-45 ○ ALIGNMENT TAPE, CR8-1A PS (OXIDE TAPE)  
(for DNW-A100P/A50P/A45P)
  
- 9-911-053-00 ○ THICKNESS GAUGE
- 9-919-573-01 ○ CLEANING LIQUID
- J-6332-240-A ○ VISC PHASE ADJUSTING TOOL  
(for DNW-A100P/A50P/A45P only)
- J-6530-060-A ○ CUSHION, HDD
- J-6530-070-A ○ TORQUE SCREWDRIVER, SHOCKLESS
  
- J-6530-650-A ○ HEAD TIP PROTRUSION MEASUREMENT GAUGE



# Appendix A

## Outline of Format

This section describes the recording format, heads configuration and signal processing.

### A-1. Outline

Sony DNWseries are 1/2-inch component digital VTRs using a new “Betacam SX” format. This unit is a Digital Video Hybrid Recorder in which the “Betacam SX” VTR and hard disk were integrated. Incorporation of hard disk into the VTR enables a nonlinear video/audio edit function.

In the Betacam SX format, “MPEG2 4:2:2 Profile @Main Level” is used as a compression system.

Interframe compression technology is first used as VTR format. The data rate is compressed to approximately 1/10 by this technology. The compressed data is then recorded on tape <sup>(Note1)</sup>.

By compressing of the data rate, the S cassette makes continuous recording of 62 minutes possible, and the L cassette makes continuous recording of 194 minutes possible.

Moreover, the data can be recorded on not only the cassette for the Betacam SX but also the metal particle tape for the conventional Betacam SP by Betacam SX format.

This unit enables the high-reliability playback without using a high-precision tracking by the head configuration based on Multiple Tracing technology.

In the DNW-A100/A100P, the data can be transferred at four times the normal speed by application of the Multiple Tracing technology.

In this unit, the analog tape (oxide and metal particle) recorded based on the Betacam and Betacam SP formats can also be played back. Therefore, current analog Betacam recorded tapes can also be used directly.

Note 1: The audio data is recorded by non-compression.

### Multiple Tracing Technology

In the Multiple Tracing technology, the non-tracking technology used for a digital audio tape recorder is applied for VTR. This technology requires no high-precision tracking during recording as well as playback.

For the playback at variable speed, it was necessary changing the drum rotation relative the tape speed or using the dynamic tracking (DT) heads for precision tracking in the past.

In this multiple tracing technology, two playback heads are provided for one recorded track. If one playback head missed the recorded track, the another playback head makes up the complete playback signal.

This technology enables the variable-speed (JOG) playback (–1 to +1 times the normal speed) without using the conventional dynamic tracking (DT) head. Moreover, by increasing the number of playback heads, it can transfer data from the tape to the signal processing circuit at high speed without changing the drum rotation changing only the tape speed. <sup>(Note 2)</sup>

Note2: DNW-A100/A100P is equipped with this function.

### A-2. Recording Format

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#### Footprint

Fig. A-2-1 shows the footprint in the 525/60 system (the top of figure) and the 625/50 system (the bottom of figure). This figure shows the tape pattern of a Betacam SX at right, and the footprint of a Betacam SP at left, respectively.

#### Footprint of Helical Track

In the Betacam SX format, two-frame (1 GOP\*) video data, system data and four-channel audio data is recorded on ten (525/60 system) or twelve (625/50 system) helical tracks.

\*GOP: Group of Pictures

This unit records two helical tracks in pairs. Therefore, the drum rotation is approximately 75 per second (common in 525/60 and 625/50 systems).

In the playback of the Betacam and Betacam SP formats, the number of drum rotations is approximately 30 per second (525/60) or 25 per second (625/50).

Moreover, the tape speed of the Betacam SX format is lower than that of the Betacam/Betacam SP format by approximately half.

This unit detects whether the tape to be played back is based on the Betacam SX format or Betacam/Betacam SP format by the initial signal of playback, and as a result, the tape is played back by the proper drum rotation and tape speed.

## Reference

The drum diameter of the Betacam SX VTR is larger than that of the Betacam/Betacam SP VTR as approximately 9%. Therefore the helical track of the Betacam/Betacam SP format is played back with a time-compressed signal as 9%. (Since the relative speed of the head to tape increases proportionally to the drum diameter even if the drum rotation and the tape speed is made same as the Betacam SX format.)

This playback signal is extended time by a signal processing circuit in the next stage (TBC\*), and output.

\*TBC: Time Base Corrector

## Footprint of Longitudinal Track

The footprint of the Betacam SX format has three longitudinal tracks (control track, time code track, and AUX track). These tracks coincide with the foot print of the Betacam/Betacam SP format (except audio CH1 track). In this unit, the all longitudinal tracks of the Betacam/Betacam SP format can be played back with additional stationary head (AT head) which play back audio CH1 track of the Betacam/Betacam SP format to the Betacam SX VTR.

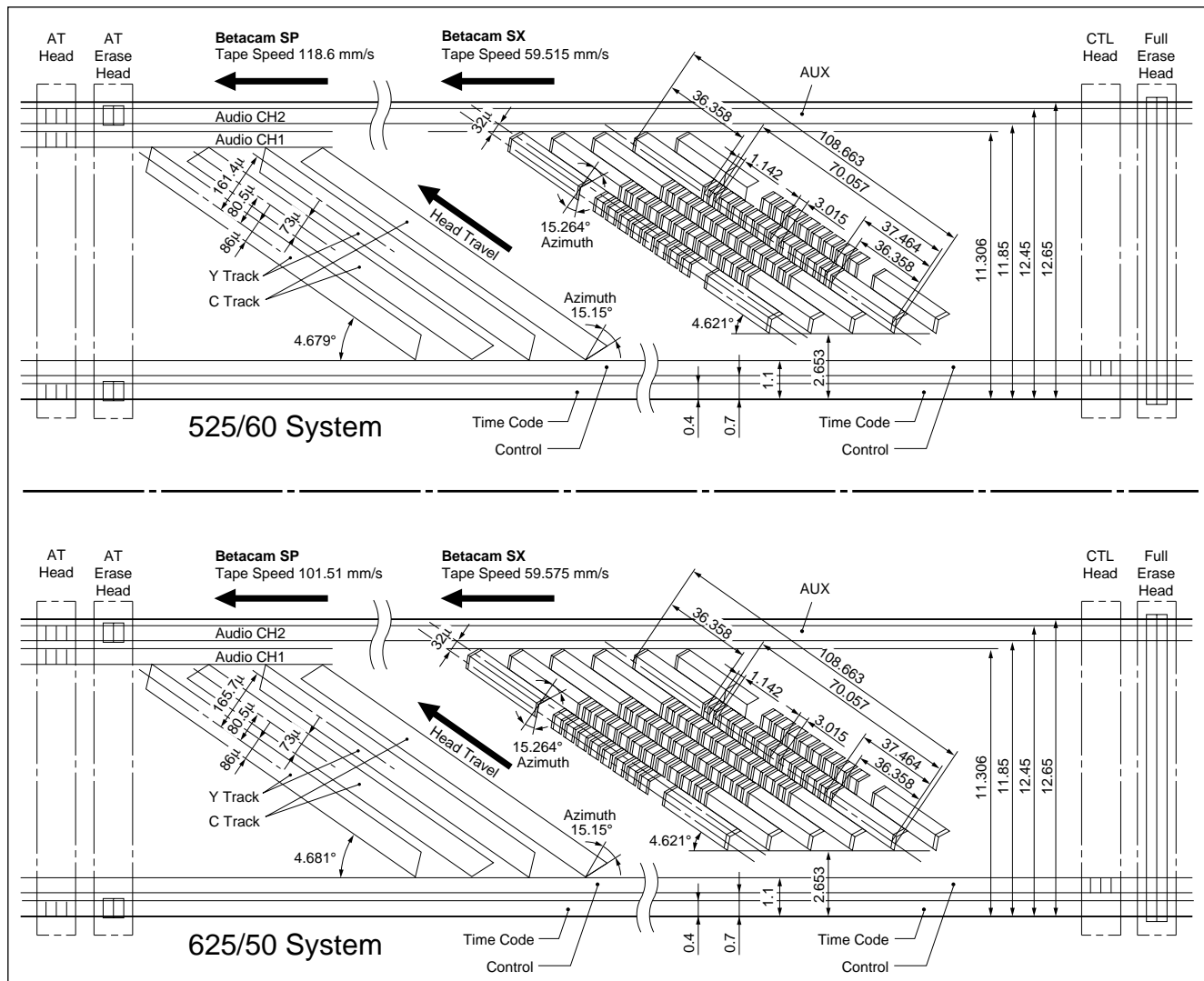


Fig.A-2-1. Footprint

## Data Arrangement on Program Tracks

Fig. A-2-2 shows the arrangement of data recorded on helical tracks (program tracks). The size of each sector in the figure is not the actual dimension ratio. For more information on the dimension, refer to Fig. A-2-1.

The Betacam SX format uses an azimuth recording system to perform high-density recording. In other words, two heads with an azimuth angle of approximately 15 degrees in the direction opposite to each other is paired to record two program tracks (tracks A and B) during a turn of the drum. Two-frame (1 GOP) video data and audio data are recorded on ten (525/60) or twelve (625/50) program tracks.

Each program track has eight audio sectors in the center. A pair of video sector and system data is before the audio sectors and the other pair is behind the audio sectors as shown in Fig. A-2-2.

Each channel of the audio sectors is arranged in the longitudinal direction of the tape. However, each channel is difficult to be influenced by the longitudinal scratch on tape because it is divided into two sectors.

Two-frame video data is dispersed into twenty (525/60) or twenty four (625/50) video sectors for recording, and four-channel audio data is dispersed into twenty (525/60) or twenty four (625/50) audio sectors for recording for every channel. Edit gaps are set between the sectors so that each channel can be edited independently. The control data for executing the Multiple Tracing and the AUX data released for the user are recorded in a system data area.

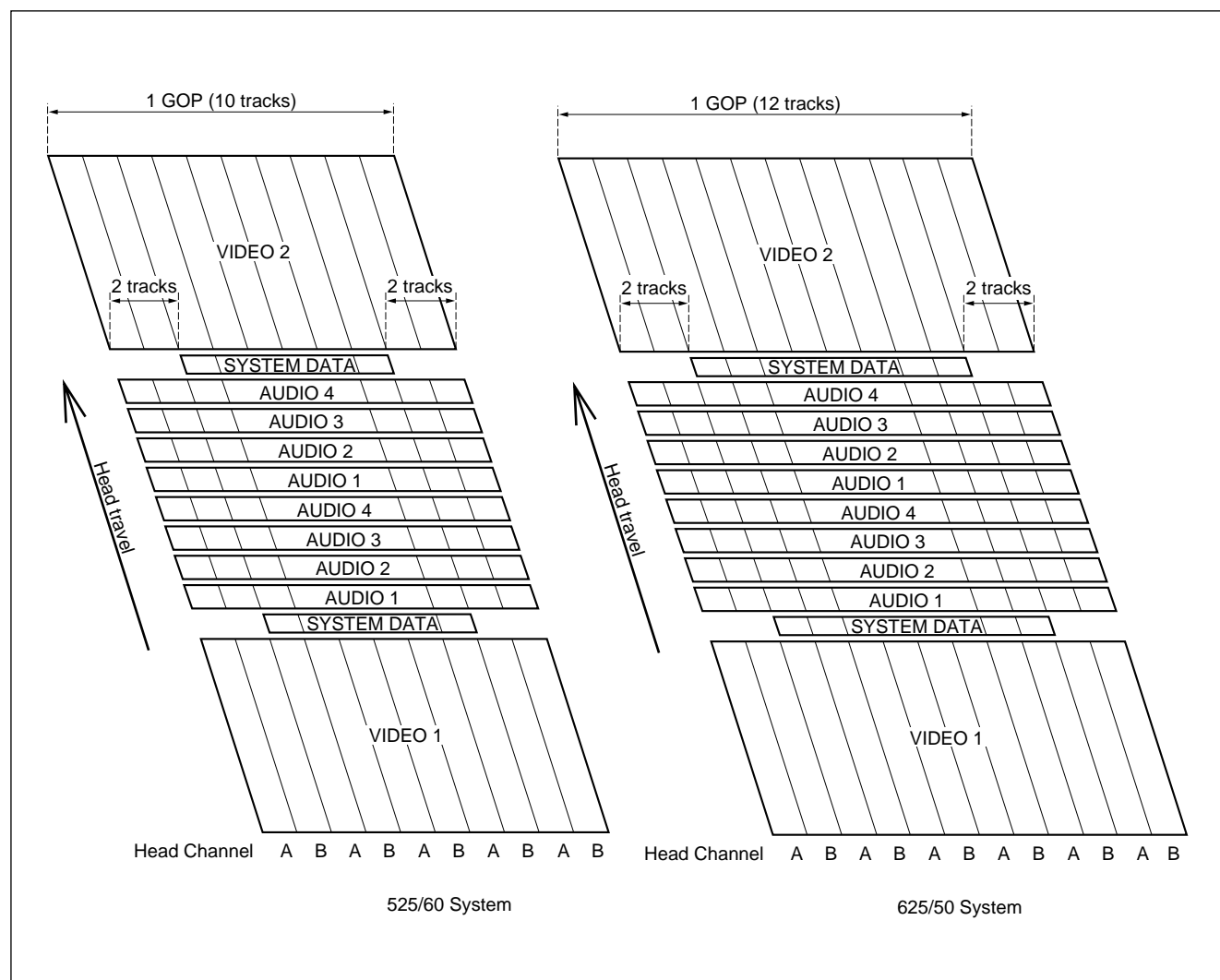


Fig.A-2-2. Data Arrangement on Program Tracks

Longitudinal Tracks of Betacam SX Format

As shown in Fig. A-2-1, a control track, time code track, and AUX track are provided in the longitudinal direction of the tape.

Fig. A-2-3 shows the CTL signal and time code signal, and the timing relation between these signals and video reference signals. The top of the figure is for the 525/60 system, the bottom of the figure is for the 625/50 system.

The CTL signal is recorded by approx. 60 Hz (525/60) or 50 Hz (625/50) rectangular pulse system and controls the start timing of each field data at the rising edge of the pulse. The CTL signal also modulates the duty cycle of the rectangular wave to 65:35 in the first field of a color flame so as to identify the field number and control the color framing.

The time code signal uses a conventional longitudinal time code based on the SMPTE/EBU standard. One flame consists of 80 bits. Flame number, second, minute, hour, and sync word data items are coded by a biphasic mark coding method and recorded for every flame. A user bit is written in time data for recording as a binary group.

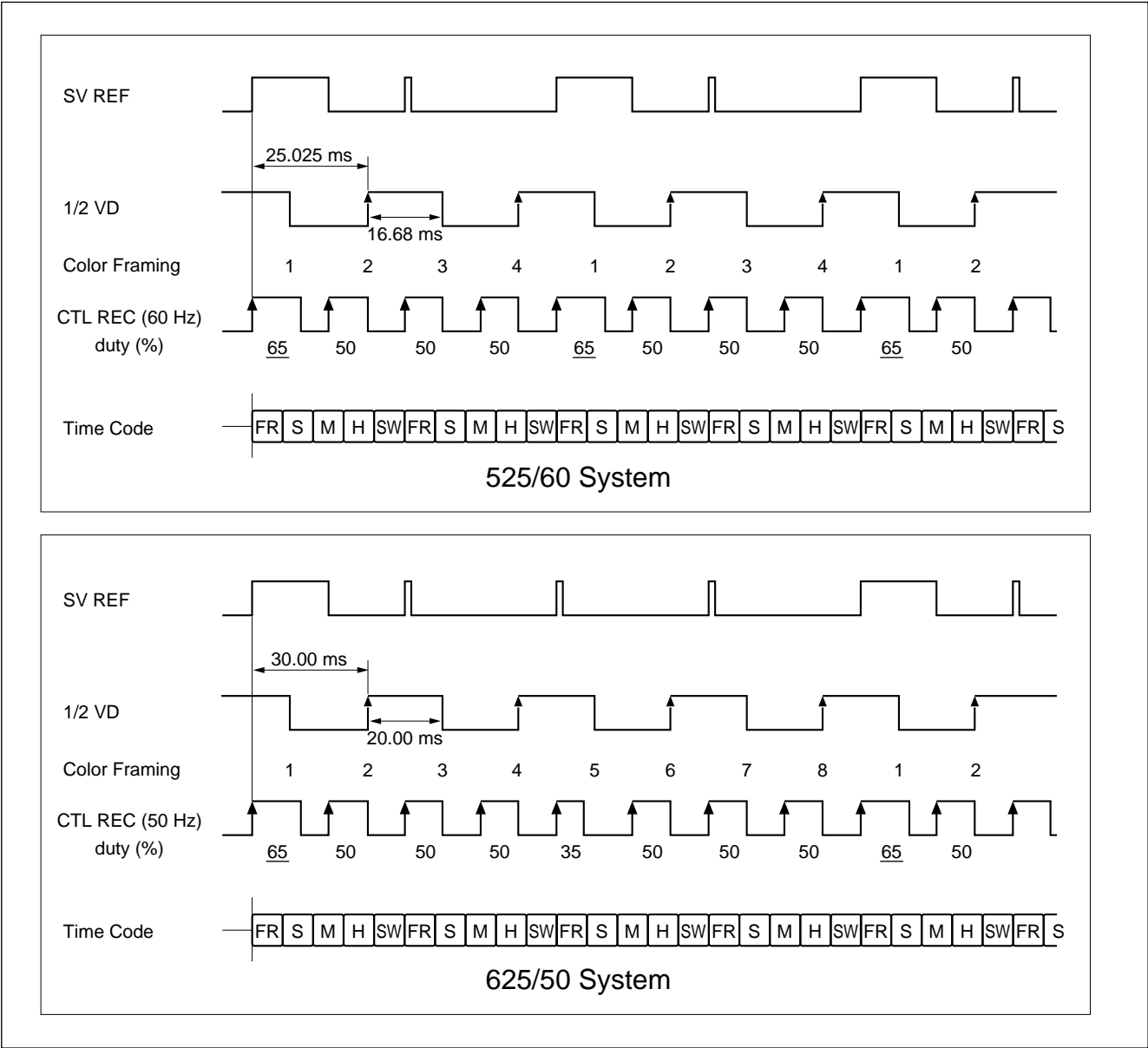


Fig. A-2-3. Recording Timing Chart of CTL Signal and Time Code Signal



### A-3. Head Configuration

Fig. A-3-1 shows the configuration of the stationary and rotary heads in the DNW-A100/A100P, and its top view.

However, the rotary heads can be actually viewed only their tips from the side of the drum.

There are two recording heads (A and B) on the rotary drum for the Betacam SX format. The erase head is mounted in the height ahead by 16 tracks than the recording head and erases the recording tracks of A and B channel collectively.

There are 16 or 8 playback heads on the rotary drum for the Betacam SX format. (The data transfer at four times the normal speed requires 16 playback heads.)

- DNW-A100/A100P : 16 heads (PB A1 to PB A8 and PB B1 to PB B8)

−1 to +1 Variable-speed playback :

PB A1, PB A5, PB B1, and PB B5 operate.

Variable-speed playback except described above

All heads operate.

During recording :

PB A1 and PB B1 operate as the CONFIDENCE head.

- DNW-A50/A50P/A45/A45P :

8 heads (PB A2, PB A4, PB A6, PB A8 and PB B2, PB B4, PB B6, PB B8)

−1 to +1 Variable-speed playback :

PB A2, PB A6, PB B2, and PB B6 operate.

Variable-speed playback except described above :

All heads operate.

During recording :

PB A2 and PB B2 operate as the CONFIDENCE head.

CONFIDENCE heads: Heads that plays back the recorded tracks during recording by the recording heads. This head is used to confirm the condition recorded at that time.

There are four playback heads (two-channel Y/C heads are mounted in pairs at an angle of 180 degrees opposite to each other) for the Betacam/Betacam SP format.

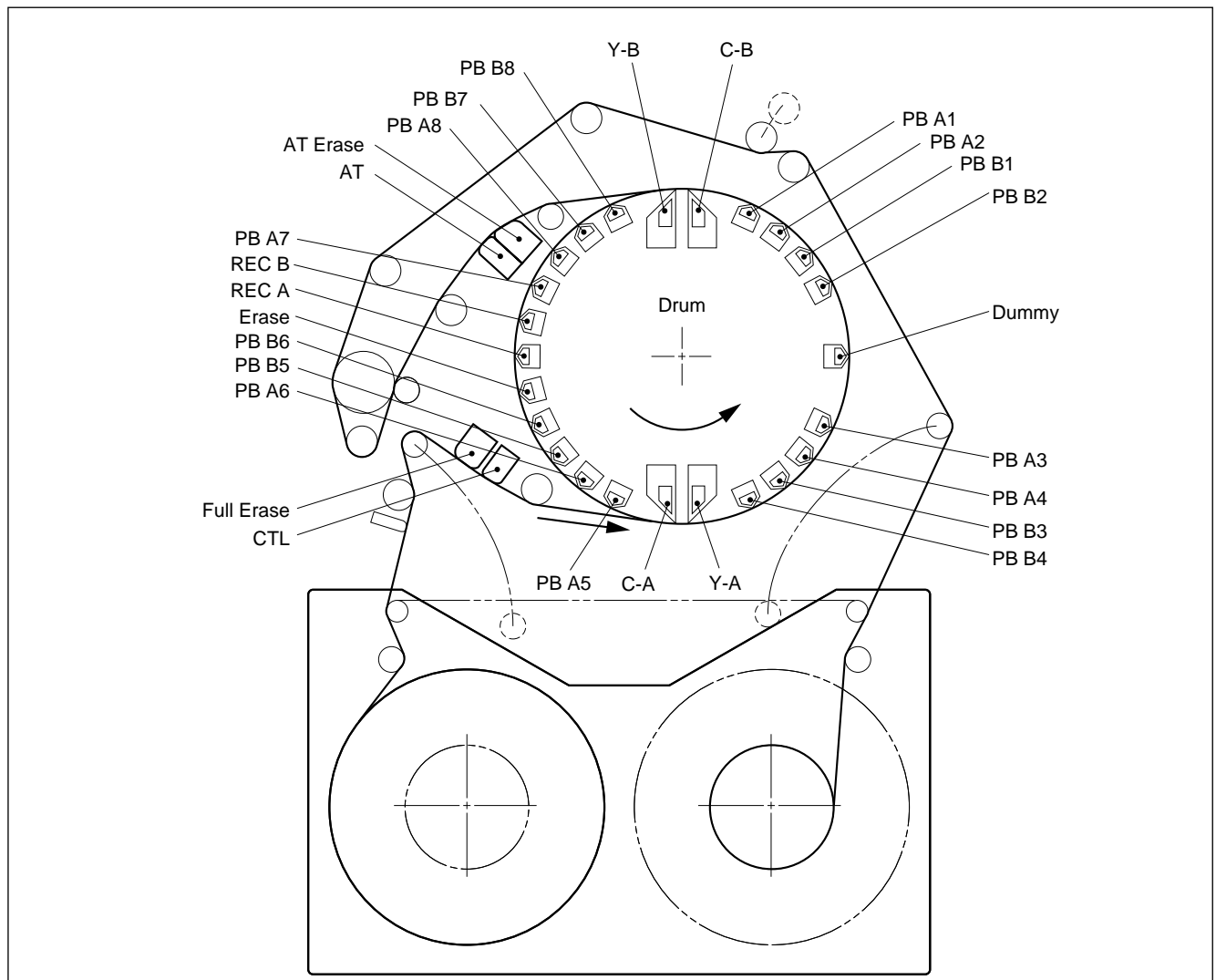


Fig. A-3-1. Configuration and Placement of Stationary Heads and Rotary Heads (DNW-A100/A100P)

## A-4. Signal Processing

### A-4-1. Features of Signal Processing

In the Betacam SX format, MPEG2 4:2:2 Profile @Main Level (omitted as MPEG2 4:2:2P@ML hereafter) is employed as the compression system of a video signal. In the MPEG2 4:2:2P@ML coder of this unit, video data is compressed for each GOP (1GOP is two frames) by frame correlation. As a result, video data can be compressed efficiently. In the DNW-A100/A100P, the video data is compressed to approximately 1/10. This unit also uses an SDTI (serial digital data interface) format for transmitting and processing the video data and audio data inside equipment. Therefore, no data conversion is required during transmission and reception of data to and from the external equipment. This enables a high-speed and non-deterioration dubbing. The SDTI format can exchange system control data as well as video data and audio data. Moreover, the conventional external equipment (routing switcher provided with an SDI interface) can be continuously used because the SDTI format directly uses the data structure of an SDI (serial digital interface: SMPTE 259M, ITU-R BT.656) format.

### A-4-2. Outline of Signal Processing

#### Reproduction of the Betacam/Betacam SP Tape

The video and audio signals reproduced from the tape based on a Betacam or Betacam SP format are converted into a digital signal. After that, the output data is also sent to the video and audio output terminals after gain adjustment by output processor.

The video data is compressed using an MPEG2 4:2:2P@ML coder, integrated with the audio data using an SDTI interface, and output to the hard disk drive. (Refer to Fig. A-4-1.)

#### Recording on the Hard Disk

The video data and audio data from each source (from tape or external) are integrated into the data based on an SDTI format using an SDTI interface. The resultant data is then recorded on the hard disk via an SCSI interface.

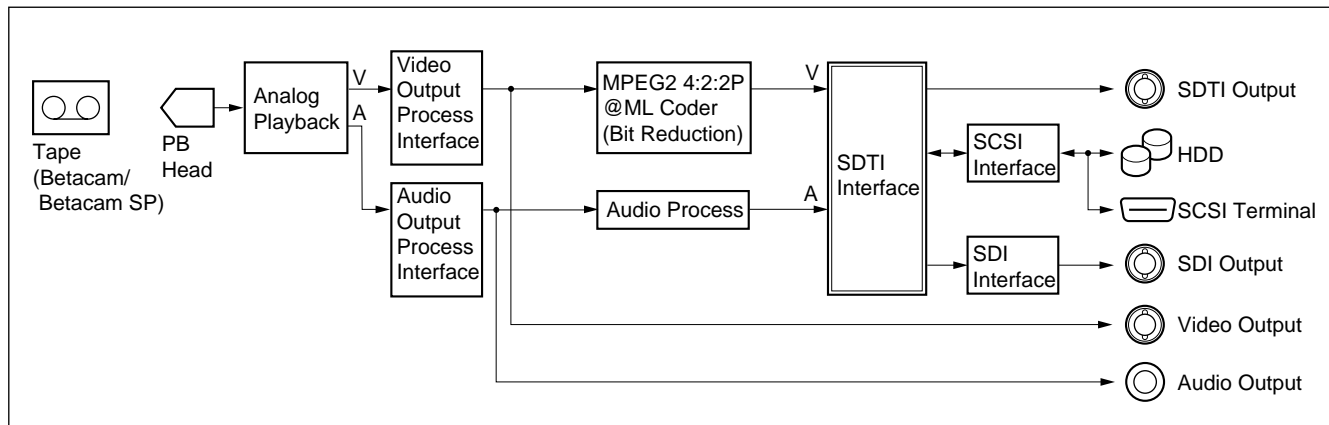


Fig. A-4-1

## External Input

Analog or digital video and audio input signals are converted into parallel video data and serial audio data, respectively. (Refer to Fig. A-4-2.)

## Recording on the Tape (Betacam SX Format)

Codes are added to the compressed video data and recording-level processed audio data for error correction using an ECC encoder.

The video data and audio data are rearranged in the recording format of the tape so as to add error correction codes (Reed-Solomon product codes). At this time, the shuffling is performed simultaneously. After that, outer ECC data, sync data, ID data, and inner ECC data are added sequentially. Lastly, channel-coded recording serial data is sent to the head and recorded on the tape.

(Refer to Fig. A-4-2.)

The video data and audio data recorded on the tape are gathered together for each GOP (1GOP is two frames) that is a compression unit of video data. The video data and audio data of 1GOP consist of ten tracks (525/60 system) or 12 tracks (625/50 system) on the tape. An error occurring during playback is corrected in this range. Therefore, a higher error correction function can be obtained.

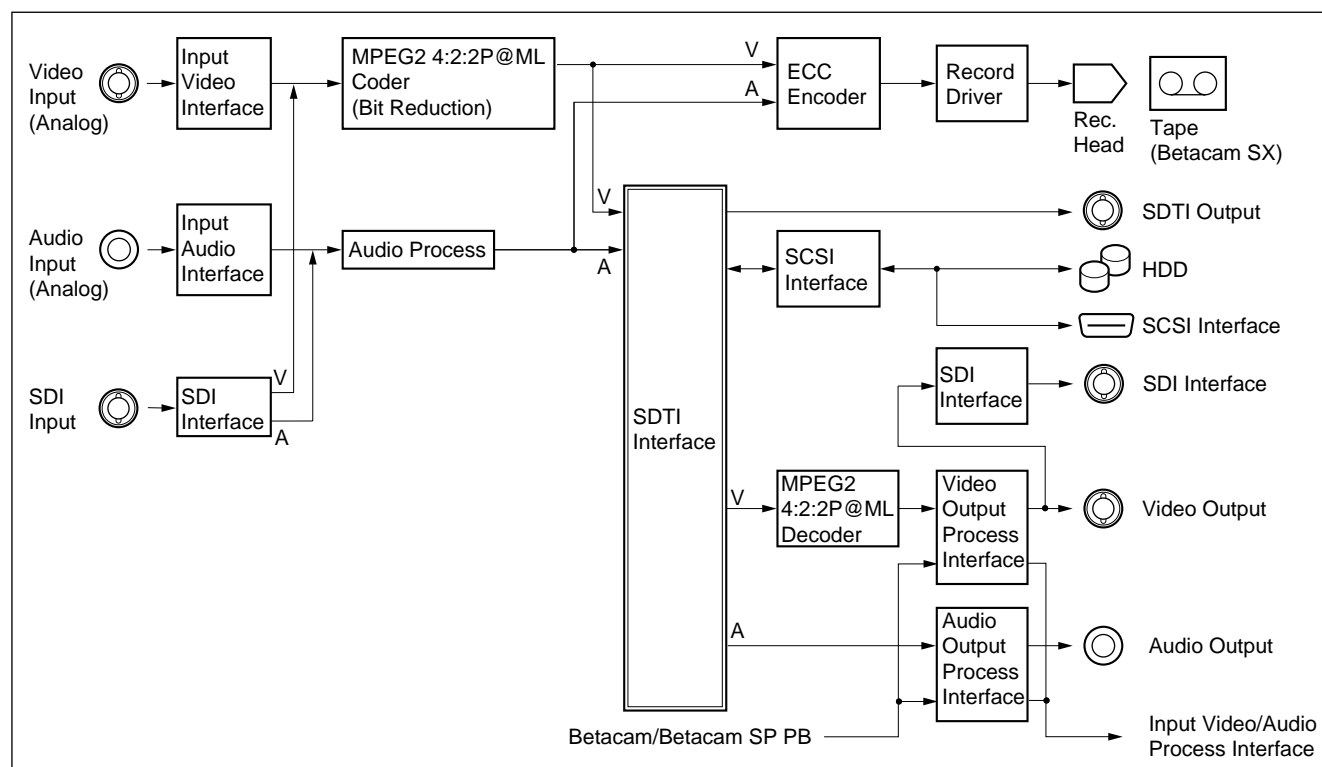


Fig. A-4-2

## Playback of Betacam SX Tape

This unit uses multiple-tracing technology in which the number of playback heads is larger than that of recording heads. This technology requires no high-precision tracking. It also enables data to be played back at high speed by increasing the number of playback heads.

The data played back by multiple heads is error-corrected using an inner code by an ECC decoder. After that, valid data is selected from memory according to error information and error-corrected using an outer code. The corrected video data and audio data are output to the 1. SDTI output terminal<sup>\*1</sup>, 2. hard disk drive, 3. SDI output terminal, and 4. video/audio output terminal via an SDTI interface, respectively. (Refer to Fig. A-4-3.)

## Video/Audio Output during High-Speed Playback (DNW-A100/A100P only)

During high-speed playback (FEED mode) of the Betacam SX tape and high-speed read from the hard disk drive, complete data is output from the SDTI output terminal. A frame-lapse picture is output from the video output terminal, and a sound generated during fast-forward playback is output from the audio output terminal. The output data can be used for monitoring.

## SDTI Input (Optionally set to DNW-A100/A100P.)

An SDTI input signal is output to the 1. SDTI output terminal<sup>\*2</sup>, 2. hard disk drive, 3. SDI output terminal, and 4. video/audio output terminal via an SDTI interface, respectively. (Refer to Fig. A-4-3.)

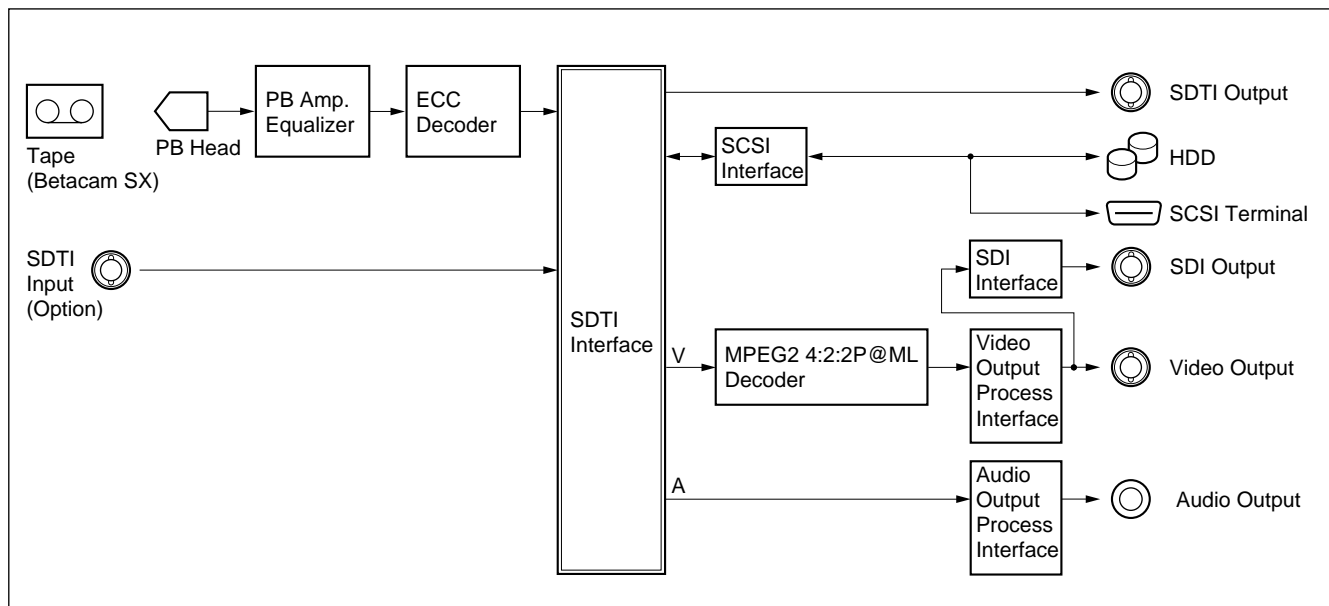


Fig. A-4-3

\*1, \*2 : DNW-A100/A100P is provided with the SDTI output terminal.

## Internal Dubbing

This unit has a function that dubs data from the Betacam/Betacam SP/Betacam SX tape to the hard disk drive and from the hard disk drive to the Betacam SX tape. For dubbing from the Betacam SX tape to the hard disk drive, the SDTI format data during tape playback is directly transmitted to the recording system of the hard disk drive. As a result, in the DNW-A100/A100P, high-speed dubbing can be obtained.

The dubbing operation from the hard disk drive to the Betacam SX tape can also be obtained by internally connecting the data read from the hard disk drive and processing as an input signal. This enables the result of nonlinear editing using a hard disk to be recorded on the tape. (Refer to Fig. A-4-4.)

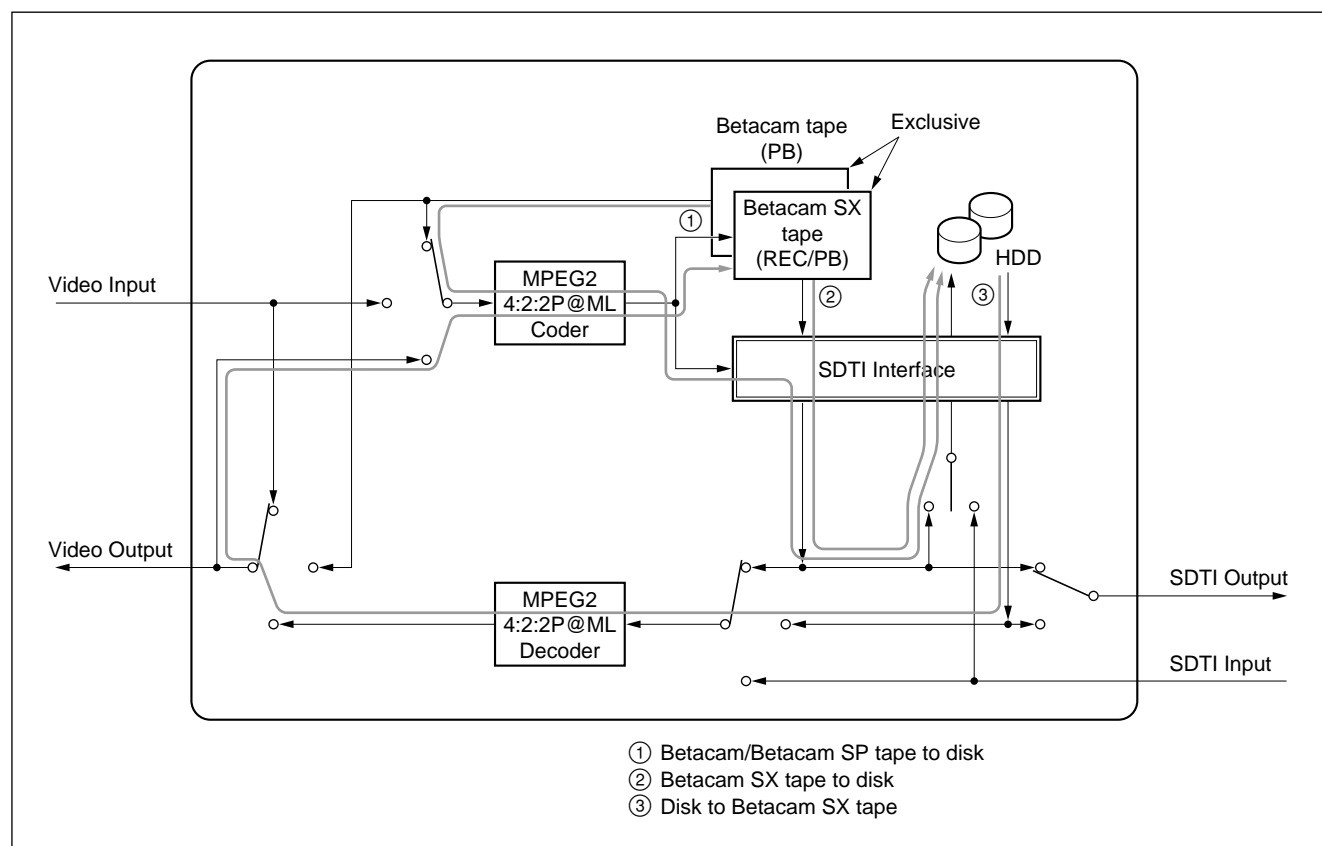


Fig. A-4-4



## Appendix B

### Setting Check Sheet

It is recommended to copy these check sheets and write down the setup conditions (switch and so on) under the application.

If the setting is changed temporarily by changing operating condition, the setting can be reset easily.

It is recommended to attach the sheets to the unit when check, maintenance and repair.

If the unit is used frequently by changing the combination of each system, making the sheets are convenient.

(Make use of the check sheets in prevention of setting error.)

Model name: DNW- Serial No.: \_\_\_\_\_

#### • Hardware

ANALOG VIDEO INPUT :	<input type="checkbox"/> COMPOSITE (BKDW-505/506)
	<input type="checkbox"/> COMPONENT (BKNW-104)
AUDIO INPUT :	<input type="checkbox"/> ANALOG (Standard)
	<input type="checkbox"/> AES/EBU (BKNW-105)
EXTERNAL HDD :	<input type="checkbox"/> Not connected
	<input type="checkbox"/> Connected (BKNW-116)
SDTI INPUT :	<input type="checkbox"/> Not installed
(DNW-A100/A100P only)	<input type="checkbox"/> Installed (BKNW-103)

#### • Firmware

SY1 ROM version:	_____
SY2 ROM version:	_____
SV1 ROM version:	_____
SSX ROM version:	_____

• RS-232C baud rate: \_\_\_\_\_ bps

#### • Hours meter

Write down the value of hours meter when checking, servicing and maintaining.

ITEM	Date	Hours meter
H01: OPERATION HOURS	/	
H02: DRUM RUNNING HOURS	/	
H03: TAPE RUNNING HOURS	/	
H04: THREADING COUNTER	/	
H12: DRUM RUNNING HOURS(Resettable)	/	
H13: TAPE RUNNING HOURS(Resettable)	/	
H14: THREADING COUNTER(Resettable)	/	
H15: AIRFILTER OPERATION HOURS(Resettable)	/	

## Connector panel

Switch		Factory setting	Setting		
Analog audio input level 600 $\Omega$	CH1	HIGH ON	<input type="checkbox"/> LOW	<input type="checkbox"/> HIGH OFF	<input type="checkbox"/> HIGH ON
	CH2	HIGH ON	<input type="checkbox"/> LOW	<input type="checkbox"/> HIGH OFF	<input type="checkbox"/> HIGH ON
	CH3	HIGH ON	<input type="checkbox"/> LOW	<input type="checkbox"/> HIGH OFF	<input type="checkbox"/> HIGH ON
	CH4	HIGH ON	<input type="checkbox"/> LOW	<input type="checkbox"/> HIGH OFF	<input type="checkbox"/> HIGH ON
Reference video input 75 $\Omega$		ON	<input type="checkbox"/> ON	<input type="checkbox"/> OFF	
Composite video input 75 $\Omega$		ON	<input type="checkbox"/> ON	<input type="checkbox"/> OFF	

## Upper control panel

Switch		Factory setting	Setting			
VIDEO INPUT		SDI	<input type="checkbox"/> SDTI* (VIDEO & AUDIO)	<input type="checkbox"/> SDI		
			<input type="checkbox"/> COMPONENT (Y-R, B)	<input type="checkbox"/> COMPOSITE		
			*: For DNW-A100/A100P only			
AUDIO MIXING		NOT MIX	<input type="checkbox"/> MIX	<input type="checkbox"/> NOT MIX		
AUDIO INPUT		ANALOG	<input type="checkbox"/> MENU	<input type="checkbox"/> SDI	<input type="checkbox"/> ANALOG/AES/EBU	
AUDIO MONITOR	L	CH-1	<input type="checkbox"/> CH-1	<input type="checkbox"/> CH-2	<input type="checkbox"/> CH-3	<input type="checkbox"/> CH-4
	R	CH-2	<input type="checkbox"/> CH-1	<input type="checkbox"/> CH-2	<input type="checkbox"/> CH-3	<input type="checkbox"/> CH-4
TC		AUTO	<input type="checkbox"/> LTC	<input type="checkbox"/> AUTO	<input type="checkbox"/> VITC	
TC GENERATOR		INT	<input type="checkbox"/> INT	<input type="checkbox"/> EXT		
		PRESET	<input type="checkbox"/> PRESET	<input type="checkbox"/> REGEN		
		REC RUN	<input type="checkbox"/> FREE RUN	<input type="checkbox"/> REC RUN		
		DF (525/60)	<input type="checkbox"/> DF	<input type="checkbox"/> NDF		
VITC		ON	<input type="checkbox"/> ON	<input type="checkbox"/> OFF		
REMOTE/LOCAL		LOCAL	<input type="checkbox"/> 9P (REMOTE)	<input type="checkbox"/> (LOCAL)		

## Sub control panel

Switch		Factory setting	Setting		
EMPHASIS		OFF	<input type="checkbox"/> ON	<input type="checkbox"/> OFF	
CHARACTER		ON	<input type="checkbox"/> OFF	<input type="checkbox"/> ON	
DOLBY NR		ON	<input type="checkbox"/> OFF	<input type="checkbox"/> ON	
OUT REF		REF	<input type="checkbox"/> INPUT VIDEO	<input type="checkbox"/> REF	
PROCESS CONTROL		LOCAL	<input type="checkbox"/> REMOTE	<input type="checkbox"/> MENU	<input type="checkbox"/> LOCAL
VIDEO		PRESET	<input type="checkbox"/> PRESET	<input type="checkbox"/> MANUAL	
CHROMA		PRESET	<input type="checkbox"/> PRESET	<input type="checkbox"/> MANUAL	
SET UP (For DNW-A100/A50/A45)		PRESET	<input type="checkbox"/> PRESET	<input type="checkbox"/> MANUAL	
BLACK LEVEL (For DNW-A100P/A50P/A45P)					
Y/C DELAY		PRESET	<input type="checkbox"/> PRESET	<input type="checkbox"/> MANUAL	
CHROMA PHASE		PRESET	<input type="checkbox"/> PRESET	<input type="checkbox"/> MANUAL	
REC INHIBIT		OFF	<input type="checkbox"/> ON	<input type="checkbox"/> OFF	
KEY INHIBIT		OFF	<input type="checkbox"/> ON	<input type="checkbox"/> OFF	
CAPSTAN LOCK		4FD	<input type="checkbox"/> 2FD	<input type="checkbox"/> 4FD	<input type="checkbox"/> 8FD (625/50)



## Short plugs on the board

**Note** Never change the setting of Factory use switches.

Board	Name	Ref. No./channel	Factory setting	Setting
APR-12	Audio input level	COR100/CH1	+4 dBm/600 $\Omega$	
		COR200/CH2	+4 dBm/600 $\Omega$	
	Audio input headroom	COR101/CH1	20 dB	
		COR201/CH2	20 dB	
	Monitor output level	L COR302	+4 dBm/600 $\Omega$	
		R COR402	+4 dBm/600 $\Omega$	
	Monitor output headroom	L COR300	20 dB	
		R COR400	20 dB	
	Variable monitor output level	L COR301	Fixed (UNITY)	
		R COR401	Fixed (UNITY)	
	HEAD TUNE Switch	S500/CH1	Factory use	—
		S600/CH2	Factory use	—
APR-13	Audio input level	COR100/CH3	+4 dBm/600 $\Omega$	
		COR200/CH4	+4 dBm/600 $\Omega$	
	Audio input headroom	COR101/CH3	20 dB	
		COR201/CH4	20 dB	
	Audio output level	COR301/CH1	+4 dBm/600 $\Omega$	
		COR401/CH2	+4 dBm/600 $\Omega$	
		COR501/CH3	+4 dBm/600 $\Omega$	
		COR601/CH4	+4 dBm/600 $\Omega$	
	Audio output headroom	COR300/CH1	20 dB	
		COR400/CH2	20 dB	
		COR500/CH3	20 dB	
		COR600/CH4	20 dB	
SS-63	Factory use	COR100	OPEN	—
	Factory use	COR101	OPEN	—
	Factory use	COR102*2	OPEN	—
	Factory use	COR103*2	SHORT*1	—
	Factory use	COR104*2	SHORT*1	—

\*1: COR103 and 104 have no plug, but are shorted by pattern.

\*2: Board number suffix -12 and -13.

## Switches on the board

**Note** Never change the setting of Factory use switches.

Board	Switch No.: Name		Factory setting		Setting	
DM-89	S101	: Y-RF LPF & EQ TEST		NORMAL POSITION	—	
	S102	: Factory use		NORMAL POSITION	—	
	S301	: C-RF LPF & EQ TEST		NORMAL POSITION	—	
	S302	: Factory use		NORMAL POSITION	—	
	S501	: Factory use		ON	—	
	S901	1 – 4: Factory use		OFF (OPEN)	—	
TBC-23	S1	1	: Y MUTE		OFF (OPEN)	
		2	: C MUTE		OFF (OPEN)	
		3	: Factory use		OFF (OPEN)	—
		4	: Factory use		OFF (OPEN)	—
		5	: COMB		OFF (OPEN)	
		6	: TBC TEST		OFF (OPEN)	—
		7	: Factory use		OFF (OPEN)	—
		8	: VIDEO PHASE		OFF (OPEN)	
	S500	1 – 4: Factory use		OFF (OPEN)	—	
SS-63	S101	1*1	: FLASH MEMORY		OFF (OPEN)	—
		2	: ANA AUTO-TRACKING		ON (CLOSE)	
		3	: ANA DISABLE		OFF (OPEN)	
		4*2	: SV ERR DISABLE		OFF (OPEN)	—
	S1100	1	: EXTENDED MENU		OFF (OPEN)	
		2	: MAINTENANCE MODE ACCESS		OFF (OPEN)	
		3 – 8: Factory use		OFF (OPEN)	—	
	S1102 (for board number suffix -13 and higher)					
	Never change the settings of S1102 switch since each switch is set according to the characteristics of the unit.					
	1 – 6: Model ID switch		DNW-A100/A100P	DNW-A50/A50P	DNW-A45/A45P	
		1	OFF (OPEN)	OFF (OPEN)	OFF (OPEN)	—
		2	OFF (OPEN)	OFF (OPEN)	OFF (OPEN)	—
		3	OFF (OPEN)	OFF (OPEN)	OFF (OPEN)	—
		4	OFF (OPEN)	OFF (OPEN)	OFF (OPEN)	—
		5	OFF (OPEN)	ON (CLOSE)	ON (CLOSE)	—
		6	ON (CLOSE)	OFF (OPEN)	ON (CLOSE)	—
	7	: J/UC, CE		ON (CLOSE)	—	
8	: 525/625	DNW-A100/A50/A45:	OFF (OPEN)		—	
		DNW-A100P/A50P/A45P:	ON (CLOSE)		—	

\*1, \*2: Never change the switches S101-1 and S101-4.

Board	Switch No.: Name	Factory setting			Setting	
SS-63	S1102 (for board number suffix -12)					
	Never change the settings of S1102 switch since each switch is set according to the characteristics of the unit.					
	1, 2 : Model ID switch	DNW-A100/A100P	DNW-A50/A50P	DNW-A45/A45P		
	1	OFF (OPEN)	ON (CLOSE)	ON (CLOSE)	—	
	2	ON (CLOSE)	OFF (OPEN)	ON (CLOSE)	—	
	3 : J/UC, CE	ON (CLOSE)			—	
	4 : 525/625	DNW-A100/A50/A45:	OFF (OPEN)		—	
		DNW-A100P/A50P/A45P:	ON (CLOSE)		—	
	S1900	1 – 8: Factory use			OFF (OPEN)	—
	SSX	S301	1 – 8: Factory use			OFF (OPEN)

## For 525/60 system

### Setup menu

**Note** When Bank 1 to 4 menu is recalled, the current menu will be overwritten.  
Be sure to check the current menu first, before recall Bank 1 to 4.

### Main menu

#### ITEM-000 series: Operational parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
001: PREROLL TIME	5S					
002: CHARACTER H-POSITION	14					
003: CHARACTER V-POSITION	56					
004: SYNCHRONIZE	ON					
005: DISPLAY INFORMATION SELECT	T&STA					
006: LOCAL FUNCTION ENABLE	ST&EJ					
007: TAPE TIMER DISPLAY	+–12H					
008: MONITORING SELECTION FOR VTR-TO-VTR EDIT	MANU					
009: CHARACTER TYPE	WHITE					
011: CHARACTER V-SIZE	×1					
013*1: 525/625 SYSTEM SELECT	OFF	–	–	–	–	–

\*1: ITEM-013 is no relation with Bank.

#### ITEM-B00 series: Menu bank parameter

This series is not necessary to write down the setting.

All setting of B00 series are OFF on the normal state. Set to ON only when ITEM is carried out. After finishing,

All setting of B00 series return to OFF automatically.

ITEM	Factory setting
B01: RECALL BANK 1	OFF
B02: RECALL BANK 2	OFF
B03: RECALL BANK 3	OFF
B04: RECALL BANK 4	OFF
B11: SAVE BANK 1	OFF
B12: SAVE BANK 2	OFF
B13: SAVE BANK 3	OFF
B14: SAVE BANK 4	OFF
B20: RESET SETUP	OFF

## Extended menu

### ITEM-100 series: Operational panel parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
101: SELECTION FOR SEARCH DIAL ENABLE	DIAL					
102: MAXIMUM SPEED	MAX					
104: AUDIO MUTING TIME	OFF					
105: REFERENCE SYSTEM ALARM	ON					
106: CAPSTAN LOCK	SW					
107: REC INHIBIT LAMP FLASHING	OFF					
108: AUTO EE SELECT	S/F/R					
109: FORCED EE WHEN TAPE UNTHREAD	ON					
118: KEY INHIBIT SWITCH EFFECTIVE AREA						
SUB-ITEM	1:REMOTE SELECT	DIS				
	2: MON./INPUT SEL	DIS				
	3: CONTROL PANEL	DIS				
119: VARIABLE SPEED LIMIT IN KEY PANEL CONTROL	OFF					
120: CTL LOCK IN VAR/SHTL	OFF					
122: AUTO EE WITH ANALOG TAPE	DIS					
123: TAPE INDEX SELECT	ALL					
124: SX TAPE JOG MEMORY PB	AUTO					

### ITEM-200 series: Remote interface parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
201: PARA RUN	DIS					

### ITEM-300 series: Editing parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
301: VAR SPEED RANGE FOR SYNCHRONIZATION	~1.5					
302: CAPSTAN RE-LOCKING DIRECTION	DECEL					
305: SYNC GRADE	ACCUR					
307: AUTO-DELETION FOR INCONSISTENT DATA	MANU					
308: SELECTION OF STD/NON-STD FOR COMPOSITE VIDEO IN (When BKDW-505 is used.)	AUTO					
309: SERVO REFERENCE SELECT	AUTO1					
310: REC INHIBIT	ALL					
316: CONFIDENCE PB MODE	OFF					
318: EDIT RETRY	ON					
320: DIGITAL AUDIO PB PROCESS ON EDIT POINT	FADE					

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
321: VIDEO SIGNAL FLOW IN DISK TO DISK	INT					
322: AUDIO SIGNAL FLOW IN DISK TO DISK	INT					
323: EXTERNAL SIGNAL FLOW DELAY	0					
324: VIDEO SIGNAL FLOW IN DISK TO TAPE	INT					
325: AUDIO SIGNAL FLOW IN DISK TO TAPE	INT					

#### ITEM-400 series: Preroll parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
401: FUNCTION MODE AFTER CUE-UP	STOP					
403: AUTOMATIC PREROLL REFERENCE ENTRY	DIS					
404: CUE-UP BY TC	REEL					
405: CUE-UP BY CTL	CAP					

#### ITEM-500 series: Tape protection parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
501: STILL TIMER	8M					
502: TAPE PROTECTION MODE FROM SEARCH	STEP					
503: TAPE PROTECTION MODE FROM STOP	STDBY					
504: DRUM ROTATION IN STANDBY OFF	OFF					
505: STILL TENSION	NORM					

#### ITEM-600 series: Time code generator parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
601: VITC POSITION SEL-1	16H					
602: VITC POSITION SEL-2	18H					
603*1: ID CODE PRESET	OFF	—	—	—	—	—
604: ID CODE SW	OFF					
605: TCG REGEN MODE	TC&UB					
606: TC OUTPUT SIGNAL IN REGEN MODE	TAPE					
607: U-BIT BINARY GROUP FLAG	000					
608: PHASE CORRECTION	OFF					
609: TCG CF FLAG	OFF					
610: REGEN CONTROL MODE	AS&IN					

\*1: ITEM-603 is no relation with Bank.

**ITEM-700 series: Video control parameter**

ITEM		Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
701: SELECTION OF VIDEO DELAY/SYNC DELAY		SYNC					
703: BLANK LINE SELECT							
SUB-ITEM	0: All line	---					
	12: 12 line	BLANK					
	13: 13 line	BLANK					
	14: 14 line	BLANK					
	15: 15 line	BLANK					
	16: 16 line	BLANK					
	17: 17 line	BLANK					
	18: 18 line	BLANK					
	19: 19 line	BLANK					
	20: 20 line	BLANK					
704: DECODE Y/C SEP MODE (When the BKDW-505 is used.)							
SUB-ITEM	12: 12 line	B&W					
	13: 13 line	B&W					
	14: 14 line	B&W					
	15: 15 line	B&W					
	16: 16 line	B&W					
	17: 17 line	B&W					
	18: 18 line	B&W					
	19: 19 line	B&W					
	20: 20 line	B&W					
	21: 21 line	COMB					
	22: 22 line	COMB					
705: EDGE SUBCARRIER REDUCER MODE		AUTO					
706: VERTICAL BLANKING V SHIFT		ON					
707: FORCED VERTICAL INTERPOLATION OFF		AUTO					
709: CAV LEVEL FORMAT							
SUB-ITEM	0: INPUT CAV LEVEL	B-CAM					
	1: OUTPUT CAV LEVEL	B-CAM					
710: INTERNAL VIDEO SIGNAL GENERATOR		OFF					
712: VIDEO PROCESS ON CAP LOCK 2FIELD		OFF					
713: VIDEO SETUP REFERENCE LEVEL							
SUB-ITEM	0: MASTER LEVEL	7.5%					
	1: INPUT LEVEL	MSTER					
	2: VBLK REMOVE CNT	THROU					
	3: BETACAM PB LEVEL	MSTER					
	4: OUTPUT LEVEL	MSTER					

ITEM		Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
714: VIDEO ADJUST RANGE		-3~+3					
715: VIDEO GAIN CONTROL		800H					
716: CHROMA GAIN CONTROL		800H					
717: CHROMA PHASE CONTROL		80H					
718: SETUP LEVEL		110H					
719: SYSTEM PHASE SYNC		80					
720: SYSTEM PHASE SC		0					
721: Y/C DELAY		800					
723: INPUT VIDEO BLANK							
SUB-ITEM	0: All line	---					
	12: 12 line	THROU					
	13: 13 line	THROU					
	14: 14 line	THROU					
	15: 15 line	THROU					
	16: 16 line	THROU					
	17: 17 line	THROU					
	18: 18 line	THROU					
	19: 19 line	THROU					
	20: 20 line	THROU					
726: H BLANKING WIDTH		NAROW					
727: VIDEO EDIT PREVIEW SWITCHER		INT					





**ITEM-800 series: Audio control parameter**

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
802: DIGITAL AUDIO MUTE IN SHUTTLE MODE	OFF					
805: AUDIO MONITOR OUTPUT MIXING	RMS					
806: LEVEL METER SCALE	PEAK 0					
807: AUDIO OUTPUT PHASE	80					
808: INTERNAL AUDIO SIGNAL GENERATOR	OFF					
809: AUDIO LEVEL METER DIMMER CONTROL	0					
810: AUDIO EDIT PREVIEW SWITCHER	INT					
813: AUDIO CH3 INPUT SELECT	SW					
814: AUDIO CH4 INPUT SELECT	SW					
815: AUDIO SAMPLING RATE CONVERTER (When the BKNW-105 is used.)	OFF					

**ITEM-900 series: Digital process parameter**

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
911: NO COMPRESSION LINE	OFF					

**ITEM-F00 series: Adjustment use only**

This series is not necessary to setting.

In the normal operation, use the factory settings.

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
F01: AUDIO NR IN SP MODE	ON					
F02: EMERGENCY TAPE PROTECTION	ENA					
F13: TRACKING CONTROL VIA SEARCH DIAL	OFF					
F15: ANALOG TAPE LTC INSERT	DIS					
F16: DEVICE TYPE MODIFY	0					
F21: PROCESS CONT VR	OFF					
F34: STOP PINCH OFF TIME	20					
F35: AUDIO DITHER	ON					

## For 625/50 system

### Setup menu

**Note** When Bank 1 to 4 menu is recalled, the current menu will be overwritten.  
Be sure to check the current menu first, before recall Bank 1 to 4.

### Main menu

#### ITEM-000 series: Operational parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
001: PREROLL TIME	5S					
002: CHARACTER H-POSITION	12					
003: CHARACTER V-POSITION	6A					
004: SYNCHRONIZE	ON					
005: DISPLAY INFORMATION SELECT	T&STA					
006: LOCAL FUNCTION ENABLE	ST&EJ					
007: TAPE TIMER DISPLAY	+–12H					
008: MONITORING SELECTION FOR VTR-TO-VTR EDIT	MANU					
009: CHARACTER TYPE	WHITE					
011: CHARACTER V-SIZE	×1					
013*1: 525/625 SYSTEM SELECT	OFF	–	–	–	–	–

\*1: ITEM-013 is no relation with Bank.

#### ITEM-B00 series: Menu bank parameter

This series is not necessary to write down the setting.

All setting of B00 series are OFF on the normal state. Set to ON only when ITEM is carried out. After finishing,

All setting of B00 series return to OFF automatically.

ITEM	Factory setting
B01: RECALL BANK 1	OFF
B02: RECALL BANK 2	OFF
B03: RECALL BANK 3	OFF
B04: RECALL BANK 4	OFF
B11: SAVE BANK 1	OFF
B12: SAVE BANK 2	OFF
B13: SAVE BANK 3	OFF
B14: SAVE BANK 4	OFF
B20: RESET SETUP	OFF

## Extended menu

### ITEM-100 series: Operational panel parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
101: SELECTION FOR SEARCH DIAL ENABLE	DIAL					
102: MAXIMUM SPEED	MAX					
104: AUDIO MUTING TIME	OFF					
105: REFERENCE SYSTEM ALARM	ON					
106: CAPSTAN LOCK	SW					
107: REC INHIBIT LAMP FLASHING	OFF					
108: AUTO EE SELECT	S/F/R					
109: FORCED EE WHEN TAPE UNTHREAD	ON					
118: KEY INHIBIT SWITCH EFFECTIVE AREA						
SUB-ITEM	1:REMOTE SELECT	DIS				
	2: MON./INPUT SEL	DIS				
	3: CONTROL PANEL	DIS				
119: VARIABLE SPEED LIMIT IN KEY PANEL CONTROL	OFF					
120: CTL LOCK IN VAR/SHTL	OFF					
122: AUTO EE WITH ANALOG TAPE	DIS					
123: TAPE INDEX SELECT	ALL					
124: SX TAPE JOG MEMORY PB	AUTO					

### ITEM-200 series: Remote interface parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
201: PARA RUN	DIS					
202: CF FLAG REPLY	8F					

### ITEM-300 series: Editing parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
301: VAR SPEED RANGE FOR SYNCHRONIZATION	~1.5					
302: CAPSTAN RE-LOCKING DIRECTION	ACCEL					
305: SYNC GRADE	ACCUR					
307: AUTO-DELETION FOR INCONSISTENT DATA	MANU					
308: SELECTION OF STD/NON-STD FOR COMPOSITE VIDEO IN (When BKDW-506 is used.)	AUTO					
309: SERVO REFERENCE SELECT	AUTO1					
310: REC INHIBIT	ALL					
316: CONFIDENCE PB MODE	OFF					
318: EDIT RETRY	ON					
320: DIGITAL AUDIO PB PROCESS ON EDIT POINT	FADE					

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
321: VIDEO SIGNAL FLOW IN DISK TO DISK	INT					
322: AUDIO SIGNAL FLOW IN DISK TO DISK	INT					
323: EXTERNAL SIGNAL FLOW DELAY	0					
324: VIDEO SIGNAL FLOW IN DISK TO TAPE	INT					
325: AUDIO SIGNAL FLOW IN DISK TO TAPE	INT					

#### ITEM-400 series: Preroll parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
401: FUNCTION MODE AFTER CUE-UP	STOP					
403: AUTOMATIC PREROLL REFERENCE ENTRY	DIS					
404: CUE-UP BY TC	REEL					
405: CUE-UP BY CTL	CAP					

#### ITEM-500 series: Tape protection parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
501: STILL TIMER	8M					
502: TAPE PROTECTION MODE FROM SEARCH	STEP					
503: TAPE PROTECTION MODE FROM STOP	STDBY					
504: DRUM ROTATION IN STANDBY OFF	OFF					
505: STILL TENSION	NORM					

#### ITEM-600 series: Time code generator parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
601: VITC POSITION SEL-1	19H					
602: VITC POSITION SEL-2	21H					
603*1: ID CODE PRESET	OFF	—	—	—	—	—
604: ID CODE SW	OFF					
605: TCG REGEN MODE	TC&UB					
606: TC OUTPUT SIGNAL IN REGEN MODE	TAPE					
607: U-BIT BINARY GROUP FLAG	000					
608: PHASE CORRECTION	OFF					
609: TCG CF FLAG	OFF					
610: REGEN CONTROL MODE	AS&IN					

\*1: ITEM-603 is no relation with Bank.

**ITEM-700 series: Video control parameter**

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
701: SELECTION OF VIDEO DELAY/SYNC DELAY	SYNC					
703: BLANK LINE SELECT						
SUB-ITEM	0: All line	---				
	9: 9,322 line	BLANK				
	10: 10,323 line	BLANK				
	11: 11,324 line	BLANK				
	12: 12,325 line	BLANK				
	13: 13,326 line	BLANK				
	14: 14,327 line	BLANK				
	15: 15,328 line	BLANK				
	16: 16,329 line	BLANK				
	17: 17,330 line	BLANK				
	18: 18,331 line	BLANK				
	19: 19,332 line	BLANK				
	20: 20,333 line	BLANK				
	21: 21,334 line	BLANK				
	22: 22,335 line	BLANK				
	23: 23 line	HALF				
704: DECODE Y/C SEP MODE (When the BKDW-506 is used.)						
SUB-ITEM	9: 9,322 line	B&W				
	10: 10,323 line	B&W				
	11: 11,324 line	B&W				
	12: 12,325 line	B&W				
	13: 13,326 line	B&W				
	14: 14,327 line	B&W				
	15: 15,328 line	B&W				
	16: 16,329 line	B&W				
	17: 17,330 line	B&W				
	18: 18,331 line	B&W				
	19: 19,332 line	B&W				
	20: 20,333 line	B&W				
	21: 21,334 line	B&W				
	22: 22,335 line	B&W				
705: EDGE SUBCARRIER REDUCER MODE	AUTO					
706: VERTICAL BLANKING V SHIFT	ON					
707: FORCED VERTICAL INTERPOLATION OFF	AUTO					
710: INTERNAL VIDEO SIGNAL GENERATOR	OFF					
712: VIDEO PROCESS ON CAP LOCK 2FIELD	OFF					

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
714: VIDEO ADJUST RANGE	-3~+3					
715: VIDEO GAIN CONTROL	800H					
716: CHROMA GAIN CONTROL	800H					
717: CHROMA PHASE CONTROL	80H					
718: BLACK LEVEL	110H					
719: SYSTEM PHASE SYNC	80					
720: SYSTEM PHASE SC	0					
721: Y/C DELAY	800					
723: INPUT VIDEO BLANK						
SUB-ITEM	0: All line	---				
	9: 9,322 line	THROU				
	10: 10,323 line	THROU				
	11: 11,324 line	THROU				
	12: 12,325 line	THROU				
	13: 13,326 line	THROU				
	14: 14,327 line	THROU				
	15: 15,328 line	THROU				
	16: 16,329 line	THROU				
	17: 17,330 line	THROU				
	18: 18,331 line	THROU				
	19: 19,332 line	THROU				
	20: 20,333 line	THROU				
	21: 21,334 line	THROU				
	22: 22,335 line	THROU				
726: H BLANKING WIDTH	NAROW					
727: VIDEO EDIT PREVIEW SWITCHER	INT					

**ITEM-800 series: Audio control parameter**

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
802: DIGITAL AUDIO MUTE IN SHUTTLE MODE	OFF					
805: AUDIO MONITOR OUTPUT MIXING	RMS					
806: LEVEL METER SCALE	PEAK 0					
807: AUDIO OUTPUT PHASE	80					
808: INTERNAL AUDIO SIGNAL GENERATOR	OFF					
809: AUDIO LEVEL METER DIMMER CONTROL	0					
810: AUDIO EDIT PREVIEW SWITCHER	INT					
813: AUDIO CH3 INPUT SELECT	SW					
814: AUDIO CH4 INPUT SELECT	SW					
815: AUDIO SAMPLING RATE CONVERTER (When the BKNW-105 is used.)	OFF					

**ITEM-900 series: Digital process parameter**

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
911: NO COMPRESSION LINE	OFF					

**ITEM-F00 series: Adjustment use only**

This series is not necessary to setting.

In the normal operation, use the factory settings.

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
F01: AUDIO NR IN SP MODE	ON					
F02: EMERGENCY TAPE PROTECTION	ENA					
F13: TRACKING CONTROL VIA SEARCH DIAL	OFF					
F15: ANALOG TAPE LTC INSERT	DIS					
F16: DEVICE TYPE MODIFY	0					
F21: PROCESS CONT VR	OFF					
F34: STOP PINCH OFF TIME	20					
F35: AUDIO DITHER	ON					

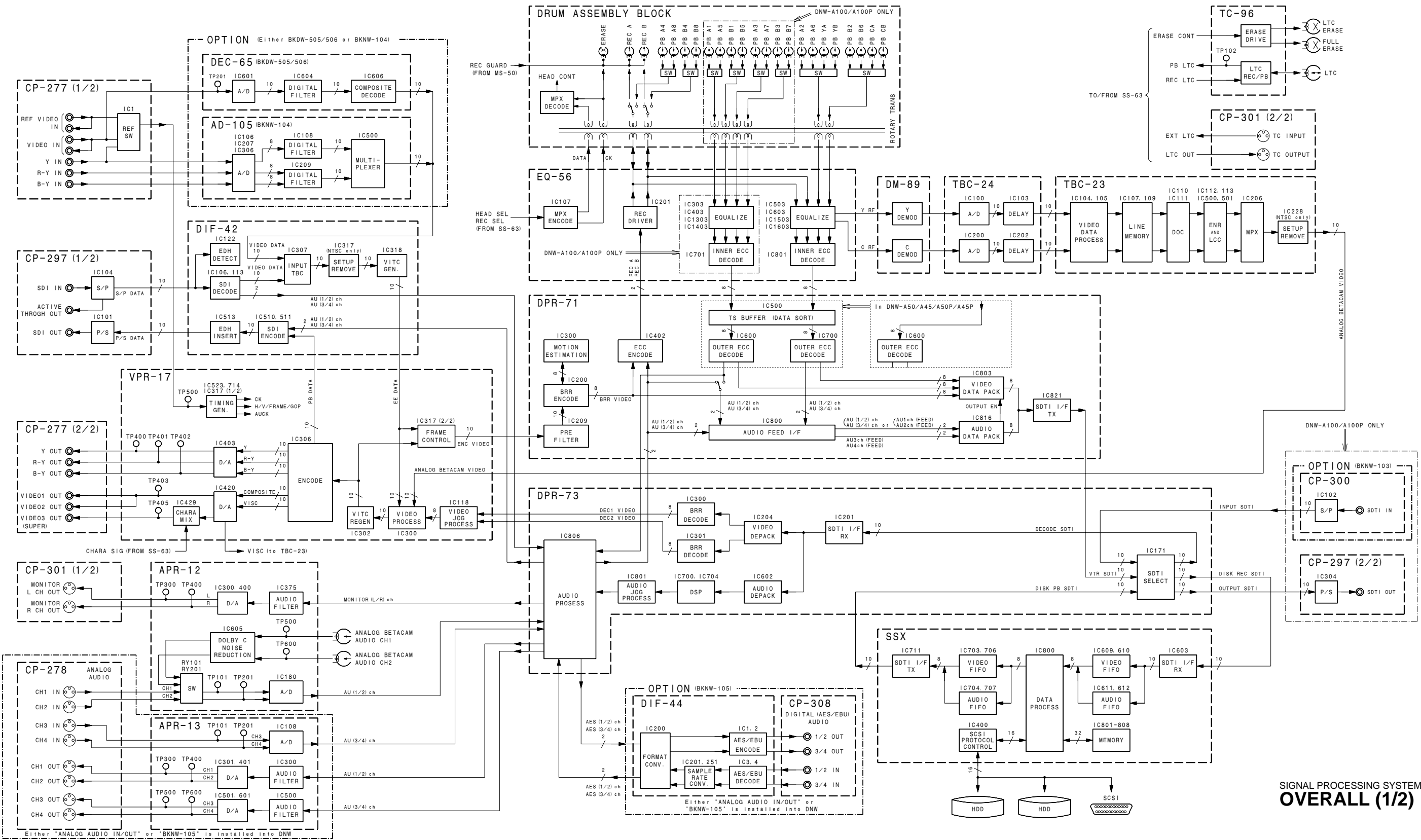




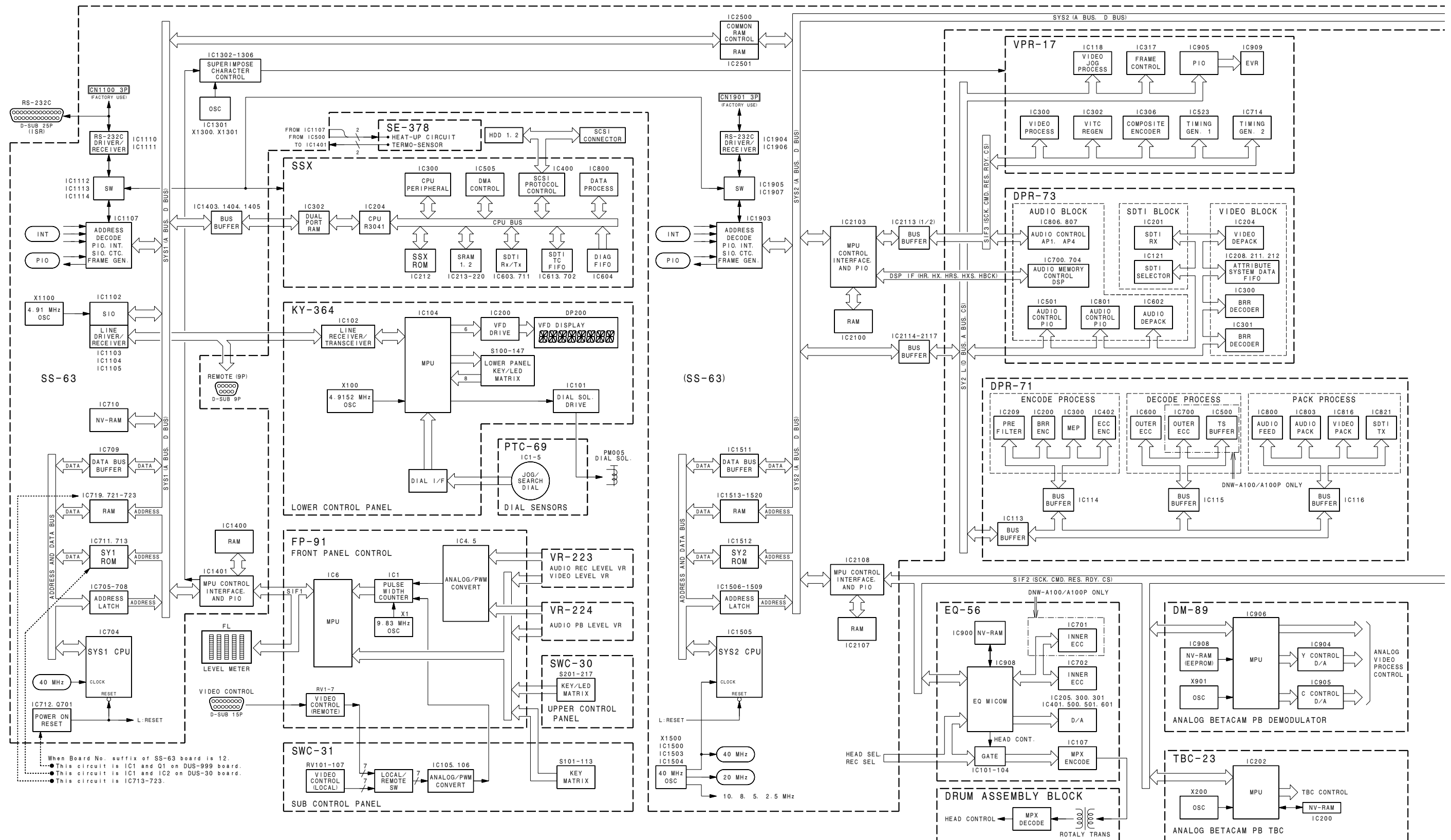
Appendix C  
Block Diagrams

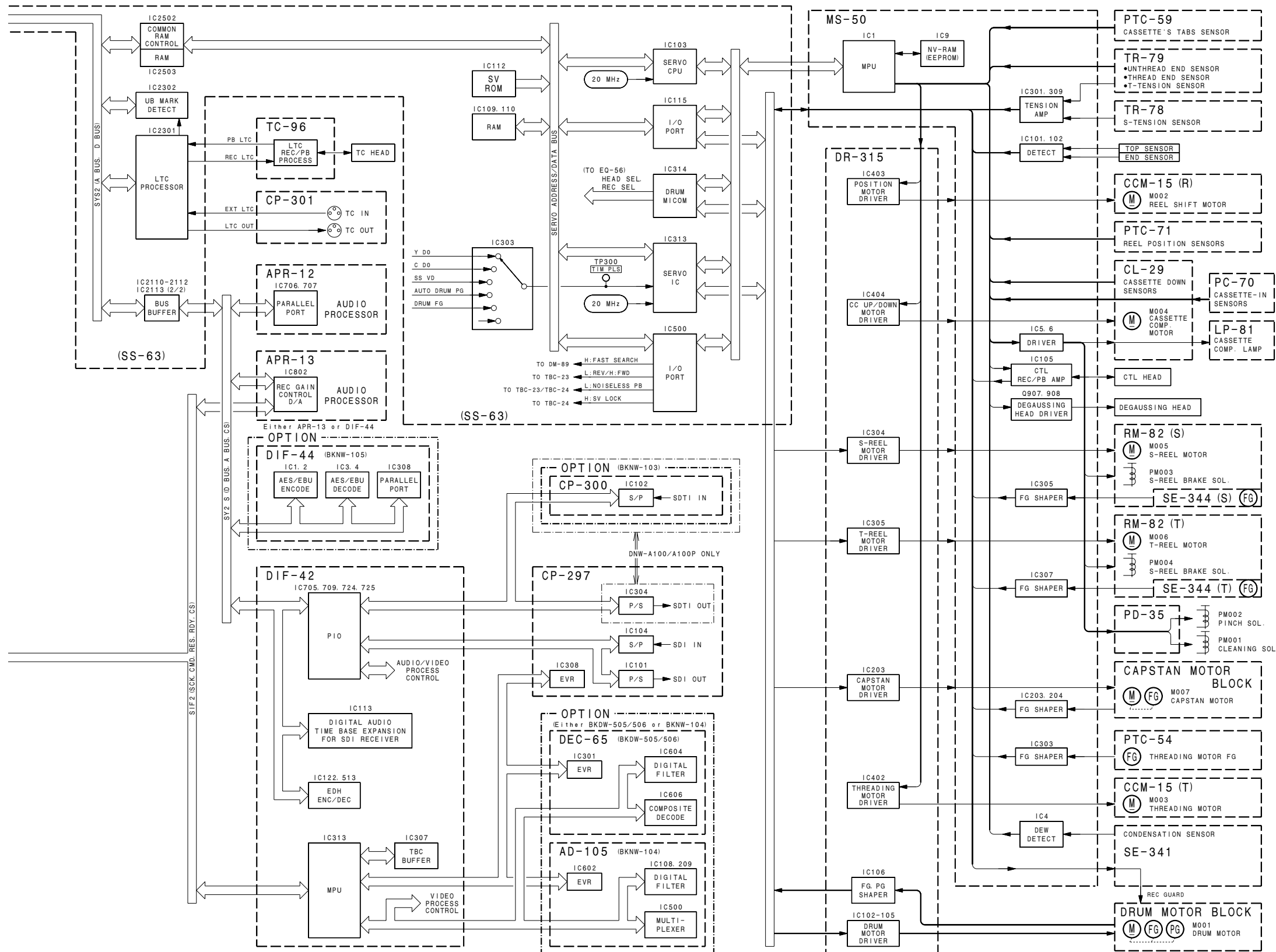
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SIGNAL PROCESSING SYSTEM  
OVERALL (1/2)





SERVO/SYSTEM CONTROL SYSTEM  
OVERALL (2/2)



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## For the U.S.A. and Canada

### SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer :

Check the metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

### LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA. Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

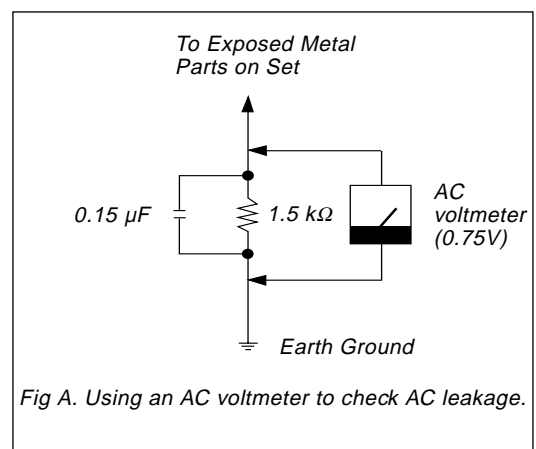


Fig A. Using an AC voltmeter to check AC leakage.

DNW-A100 (UC)  
DNW-A100P (CE, UC)  
DNW-A50 (UC)  
DNW-A50P (CE, UC)  
DNW-A45 (UC)  
DNW-A45P (CE, UC) E  
3-190-561-06

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